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FORMERLY

AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Ass'n.)

EDITED AND PUBLISHED FOR

The American Veterinary Medical Association

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OF THE

American Veterinary Medical Association

FORMERLY AMERICAN VETERINARY REVIEW

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METRIC STANDARDS BILL INTRODUCED

Representative Britten (Illinois) on December 7, 1925, introduced a bill in Congress extending the use of metric weights and measures in merchandising. The bill (H. R. 10) was referred to the Committee on Coinage, Weights and Measures and ordered to be printed. The bill reads as follows:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That from and after the 1st day of January, 1935, metric weights and measures, except as herein provided, shall be used for the following purposes

"(1) For buying or selling goods, wares, or merchandise, unless permission to use other weights and measures has been granted by the United States Department of Commerce or by a State department of weights and measures or by an authorized State official.

"(2) For charging or collecting for the transportation of any goods, wares, or merchandise, unless permission has been granted to do otherwise by any of the authorities designated above.

"SEC. 2. Not later than the 1st day of January, 1935, all postage, excises, duties, and customs charged or collected by weight or measure by the Government of the United States of America shall be charged or collected in terms of or according to metric weights and measures.

"SEC. 3. Nothing in this Act shall be understood or construed as applying to—

"(1) The construction or use in the arts, manufacture, or industry of any specification, drawing, goods, ware, merchandise, tool, machine, or other appliance or implement designed, manufactured, constructed, or graduated in any system of measurement.

"(2) The ordering, buying, or selling of manufactured articles, such as tools, machines, or parts of machines, ordinarily known by or designated in terms of any other system of weight or measure.

"(3) Any contract made before the 1st day of January, 1935.
"(4) The survey or description of lands within the jurisdiction of the United States of America, or transactions in lands or real estate therein.
"(5) The sale of goods, wares, or merchandise originally intended for any foreign country.
"SEC. 4. After the 1st day of January, 1935, the terms 'world yard' for the 'meter,' 'world quart' for the 'liter,' and 'world pound' for 'five hundred grams' shall be recommended for international use and accepted as metric terms.
"SEC. 5. All Acts or parts of Acts inconsistent herewith are hereby repealed but only in so far as they are inconsistent herewith; otherwise they shall remain and continue in full force and effect.
"SEC. 6. Rules and regulations for the enforcement of this Act shall be made and promulgated by the Secretary of Commerce, who shall also take such steps as he may deem necessary to make this Act effective."

For some time veterinarians have been using certain metric measurements and we see no reason why the profession should continue to use two systems, as at present. No one denies that going over to the metric system completely would be anything short of a revolutionary change but, as in all such things, the process would necessarily be a gradual one. It was undoubtedly with that thought in mind that the provisions of the bill, if adopted, are not to take effect until January 1, 1935.

Metric weights and measurements have been employed in practically all scientific work for a number of years. It is rather remarkable too that the United States should have been the pioneer in decimal currency and at the same time should have been so slow to recognize the advantages of the metric system of weights and measurements, which, according to latest computations, are now officially in use in countries in all parts of the world having a population of approximately 770,000,000 people. The advantages of the metric system are too numerous and too well known for us to take the space to enumerate them here. If you, as a veterinarian, favor the Britten Bill, communicate with the Chairman of the Committee on Coinage, Weights, and Measures, House of Representatives, Washington, D. C.

THE RABIES PROBLEM

In the face of our rather extensive accumulation of knowledge concerning the disease, and although we have had at our disposal for almost forty years various biological agents for its prevention, and in spite of the fact that we have a large and ever-increasing number of live stock sanitary laws, rules, regulations and ordinances for its control, it would appear that rabies, during the past year, was more widespread throughout the United States than at any previous time.

There is no animal disease, accounts of which are more acceptable to the average newspaper than rabies. A story of the appearance of a mad dog, running down the middle of Main Street, is news to the average editor. There is no disease, either of humans or animals, concerning which there is more ignorance, superstition, misunderstanding and poppy-cock than rabies, evidenced by the articles which have appeared in the press the past year or so.

According to statistics recently made public by the Department of Health of the City of New York, the number of persons bitten by dogs has increased each year during the past five-year period:

Year	Persons Bitten
1921	3,049
1922	3,455
1923	4,538
1924	4,699
1925	7,030

It is understood, of course, that all of these bites were not inflicted by rabid dogs, but the figures may be taken to illustrate graphically a condition which exists, and one that must be taken into consideration in any plan for the control of rabies, namely, the large number of stray or ownerless dogs to be found in almost any populated locality. Statistical data are not available to substantiate the statement, but it is believed that a large part of the 7,030 bites reported in New York City during 1925 were inflicted by stray curs which infest the highways and by-ways of practically every municipality.

Ordinances, making compulsory either the muzzling or vaccination of dogs, lose a great deal of their efficacy, unless provision is made for rounding up all ownerless strays. As a matter of fact, there is little to be gained from muzzling unless *every* dog is muzzled. The following is about what happens in the average locality. A rabid dog appears and bites a large number of other dogs, some without the knowledge of the owners. A muzzling ordinance is put into effect. Nine out of ten dogs are muzzled; the tenth dog goes unmuzzled. As like as not, this tenth dog is one that has been bitten, develops rabies, runs amuck and spreads the infection to a number of other dogs.

In every ten dogs bitten, we will say that nine were muzzled. Muzzling gave them absolutely no protection against rabies.

As a matter of fact, by being muzzled, they were really less able to protect themselves against the attack of the rabid dog than if they had not been muzzled. Vaccination would probably have protected them against infection, and the absence of a muzzle would have allowed them to protect themselves, or perhaps even to kill the attacking animal.

Every time a muzzling ordinance is proposed, there will be some person ready to oppose it on "humane" grounds. Unfortunately, the same opinions prompt objections to vaccination. The very word "vaccination" is repulsive to a certain class of people. However, for reasons already stated, muzzling and vaccination are not comparable; one is not a substitute for the other. Neither one is a substitute for other control measures—in this case, the proper rounding-up and disposition of the stray and ownerless curs.

In spite of the fact that a few instances have been reported of the apparent failure of the single-dose rabies vaccine to afford protection, in anything that has been said or inferred here in favor of vaccination, we have assumed that the single-dose vaccine will immunize a large percentage of dogs for a period of approximately one year. Experimental data are available to back up this statement. We have assumed that all vaccine is being conscientiously prepared by our manufacturers, and that all practitioners are administering it with an equal amount of care.

We hope that no manufacturer has turned an attentive ear to those veterinarians who have expressed a desire for a vaccine with a low solid content, just because such a product may be more easily administered. We can conceive of such a vaccine being put on the market and at a lower price, but it is our understanding that each dose of vaccine should contain a certain amount of brain material, which in turn, actually contains or is closely associated with the antigenic substance which produces the immunity to rabies.

One thing is certain, and that is the fact that the quickest, surest, and most satisfactory way to establish a value for the single-dose vaccine as a prophylactic agent against rabies is by actual trial under practical conditions. Unfortunately the facilities are frequently not at hand for keeping careful records of the results of vaccination.

When the figures are available, they must be studied very carefully and no conclusions drawn that are not borne out by

the statistics. The incidence of rabies in vaccinated dogs may be compared fairly with the incidence of the disease in unvaccinated dogs only if the two groups were under comparable conditions, particularly as to the degree of exposure. For example, licensed dogs, as a group, can not fairly be compared with unlicensed dogs, for the reason that the former would naturally receive better care and would be less exposed.

ANOTHER COW DIES OF RABIES

Second of Herd On Bell Farm Is Victim of Malady.

STATE APPROVES DOG QUARANTINE

Ban Will Go Into Effect Next Week

DR. J. C. HUNT BIT BY MAD HORSE

Veterinarian Forced to Shoot I

DOG HAS RABIES

FEAR RABIES IN NEW HERD

VETERINARIAN IS BITTEN BY MOTHER DOG

VACCINATION OF DOGS HERE WILL BEGIN WEDNESDAY

Engine Houses to Be Utilized in Work; City to Furnish Tags

CITY OFFICIALS ARE DISTURBED BY DOG RABIES

TWO MILE AREA QUARANTINED FOR RABIES IN KNOX

TWO MILES AREA IS AFFECTED

RABIES DEVELOPED IN STONY RIDGE DOG

VACCINATION OF DOGS SUGGESTED

DOG WITH RABIES IS KILLED IN VILLAGE

MAD HORSE

GUTTENBURG, Ia., Oct. 20. —

RABID DOGS GIVE MUCH ALARM TO MANY FARMERS

One Dog Went Mad a Month Ago and Ran Wild, Biting Other Dogs —Danger is Real.

MISSOURI POINT RESIDENTS WARNED

Are Cautioned by Veterinarian to be Careful in Event of Any Dog Bites and to Watch Pets.

RABIES WORST IN MANY YEARS

RABID DOG IS SHOT IN HOME

nily Takes Pasteur Tre ment Though No Bitten.

eterinarian Takes Pasteur Treatment

ght Persons May Be Infected

MASON COUNTY HORSE DIES OF HYDROPHOBIA

Report Cattle Died from Rabies

DOG BITE WIPES OUT STOCK OF OSCAR BOWMAN

Akin Farmer Kills Mad Horse After Sheep and Hogs Die of Rabies.

MAN BITTEN BY MAD MULE; GOES FOR TREATMENT

A. Allyn Chase Goes to St. Louis; Mule is Killed.

A few samples of the newspaper publicity given to rabies the past year

APPLICATIONS FOR MEMBERSHIP

Since the first of the year we have received forty-five applications for membership and have reinstated twenty-seven former members of the Association—not a bad showing for three months. It should be noted that forty of the applications were from men in twenty-two different states, four from Canada and one from the territory of Hawaii. The twenty-seven reinstatements were distributed over sixteen states and one Canadian province. We believe it would be fair to say that this widespread distribution is indicative of a generalized renewal of interest in the work of the Association, rather than the result of any concentrated membership drive in any one section of the country.

Do not forget the conditions under which applications are now being handled. Section 6 of Article 2 of the By-laws reads:

> "Applications for membership shall be made upon blanks furnished by the Association, in the handwriting of the applicant, and must be endorsed by two members of the Association in good standing, one of whom must be a resident of the state, province or territory in which the applicant resides. Applications must be accompanied by the membership fee of $5.00 and dues pro rata for the balance of the fiscal year current, as stated on the application blank. Applications must be filed with the secretary and be examined by him for correctness and completeness as far as available information will allow. After such approval by the secretary, the latter will cause to be published in the official JOURNAL, as soon thereafter as possible, said application with name and address of applicant, college and year of graduation, and names of vouchers. If no objections shall be filed with the secretary, as against the applicant being admitted to membership in the Association, his name shall again be listed in the next issue of the JOURNAL, and if no objections shall have been filed within thirty days after the second publication of the name of the applicant, he shall automatically become a member and shall be so enrolled by the secretary, and membership card issued. If any objections be filed against any applicant, either on first or second notice, said application will be referred to the Executive Board for consideration."

The amount that should accompany an application filed this month is $8.75, which covers membership fee and dues to January 1, 1927, including subscription to the JOURNAL.

FIRST LISTING

BACUS, JAMES E. — Pukoo, Molokai, Hawaii.
D. V. S., Kansas City Veterinary College, 1907
Vouchers: P. H. Browning and B. A. Gallagher.

CALDWELL, C. P. — c/o Health Department, Durham, N. C.
D. V. M., Kansas City Veterinary College, 1917
Vouchers: A. A. Husman and W. C. Dendinger.

HOEFFLIN, CARL — 41 Cliff St., Ottawa, Ont.
D. M. V., University of Bern, 1922
Vouchers: J. W. Patton and M. V. Gallivan.

HUFFMAN, ROBERT P. — Box 733, Wilmington, N. C.
D. V. M., United States College of Veterinary Surgeons, 1918
Vouchers: A. A. Husman and W. C. Dendinger.

INGRAM, SHERMAN R — Fort Clark, Texas.
D. V. S., Kansas City Veterinary College, 1906
Vouchers: E. K. Rogers and A. T. Kinsley.

LUH, AUGUST C. — Victoria, Mo.
D. V. M., Kansas City Veterinary College, 1917
Vouchers: H. A. Wilson and Ralph Graham.

McCUE, G. P. — 114 4th Ave. S. W., Aberdeen, S. D.
D. V. M., McKillip Veterinary College, 1920
Vouchers: C. C. Lipp and J. B. Taylor.

MOORE, A. A. — 301 So. Kansas St., Edwardsville, Ill.
D. V. M., Grand Rapids Veterinary College, 1912
Vouchers: W. H. Welch and L. W. Moore.

MOORE, WILLIAM — c/o N. C. Dept. of Agr., Raleigh, N. C.
D. V. S., United States College of Veterinary Surgeons, 1911
Vouchers: A. A. Husman and W. C. Dendinger.

PORTER, ARMER — Fredonia, Kans.
D. V. M., Kansas State Agricultural College, 1925
Vouchers: H. F. Lienhardt and J. P. Scott.

SPEARMAN, HAROLD — Stittsville, Ont.
V. S., Ontario Veterinary College, 1917
Vouchers: Wilbert Spearman and George Hilton.

VAN ROEKEL, HENRY — Box 325, Blacksburg, Va.
D. V. M., Iowa State College, 1925
Vouchers: I. D. Wilson and Russell A. Runnells.

Applications Pending

SECOND LISTING

Batten, F. B., 179 Park Ave., Lexington, Ky.
Birdwhistell, Robert N., 1047 Oak St., Columbus, Ohio.
Bonifield, H. M., Warren, Ind.
Eliason, C. O., Benson, Minn.
Hanna, A. F., Fortuna, Calif.
Holmes, Charles Harold, 144 E. Short St., Lexington, Ky.
Johnston, Ernest F., Carp, Ont.
McBroom, George W., Atwater, Minn.
Snortum, Ernest P., Canby, Minn.
Vansant, Joseph W., Huntingdon Pike and Shady Lane, Fox Chase, Phila., Pa.

Reinstated

Cline, C. M., Box 298, Marysville, Mo.
Smathers, D. L., 1810 Hughland Ave., Portsmouth, Ohio.

EXECUTIVE BOARD ELECTION

The election of a member of the Executive Board for District No. 6 (California, Nevada, Utah, Colorado, Kansas, Missouri, Arkansas, Oklahoma, Louisiana, Texas, New Mexico, Arizona, Mexico and Central America) is creating considerable interest, in certain parts of the district, at least. A recent compilation of the nominating ballots cast showed a total of thirty-three nominees. In seven states in the district there appear to be favorite sons in the field, most of whom are being well supported. The wide distribution of this support is reflected by the fact that the leading candidate has only about fifteen per cent of the total vote to his credit, with the second candidate one vote behind. The nominating polls will be closed April 17, 1926.

ERRATUM

In the editorial, "Immunization Against Anthrax," in the March issue, the last word in line 3, on page 683, should have been "in" instead of "by."

COMING VETERINARY MEETINGS

New York City, Veterinary Medical Association of. Academy of Medicine, 17 W. 43rd St., New York, N. Y. April 7, 1926. Dr. C. G. Rohrer, Secretary, 40 W. 61st St., New York, N. Y.

Chicago Veterinary Society. Great Northern Hotel, Chicago, Ill. April 13, 1926. Dr. J. B. Jaffray, Secretary, 2956 Washington Blvd., Chicago, Ill.

Southeastern Michigan Veterinary Medical Association. Detroit, Mich. April 14, 1926. Dr. H. Preston Hoskins, Secretary, 716 Book Bldg., Detroit, Mich.

Maine Veterinary Medical Association. Bangor, Me. April 14, 1926. Dr. A. J. Neal, Secretary, 234 Essex St., Bangor, Me.

Willamette Valley Veterinary Association. Corvallis, Ore. April 14, 1926. Dr. Fred W. Lange, Secretary, Salem, Ore.

Indiana-Illinois Veterinary Medical Association. Vincennes, Ind. April 16, 1926. Dr. M. W. Scott, Secretary, 304 W. 10th St., Vincennes, Ind.

Conestoga Veterinary Club. Stevens House, Lancaster, Pa. April 18, 1926. Dr. H. S. Weber, Secretary, 27 E. Liberty St., Lancaster, Pa.

Kansas City Association of Veterinarians. New Baltimore Hotel, Kansas City, Mo. April 20, 1926. Dr. J. D. Ray, Secretary, 400 New Centre Bldg., Kansas City, Mo.

Keystone Veterinary Medical Association. Philadelphia, Pa. April 28, 1926. Dr. C. S. Rockwell, Secretary, 5128 Chestnut St., Philadelphia, Pa.

Massachusetts Veterinary Association. American House, Boston, Mass. April 28, 1926. Dr. H. W. Jakeman, Secretary, 44 Bromfield St., Boston, Mass.

Connecticut Veterinary Medical Association. Waterbury, Conn. May 5, 1926. Dr. Geo. E. Corwin, Secretary, 11 Warrenton Ave., Hartford, Conn.

Hudson Valley Veterinary Medical Society. Catskill, N. Y. May 11, 1926. Dr. Wm. H. Kelly, Secretary, 233 Western Ave., Albany, N. Y.

Missouri Veterinary Medical Association. Hotel Claridge, St. Louis, Mo. May 18-19-20, 1926. Dr. Fred C. Cater, Secretary, Sedalia, Mo.

NOTES ON VETERINARY RESEARCH IN EUROPE*

By C. M. HARING

University of California, Agricultural Experiment Station, Berkeley, California

Facilities for veterinary research are now better in several of the countries of Europe than they were before the war. This is particularly true in England, where institutes for experimental work on diseases of animals have been established at Cambridge, Weybridge, and at the Royal Veterinary College, London. In France, a research institute has been equipped at Alfort, and Professor Vallée has given up his teaching duties to devote full time to its direction.

Three splendid buildings have been added to the equipment at the Utrecht school since 1920, and a new building is under construction at the University of Leyden, to house the Department of Comparative Pathology. At the Brussels Veterinary School, a well-equipped state laboratory for diagnosis and research was opened in March of this year. The veterinary group at the new University of Milan will consist of eight splendid buildings. They were about half-completed in March, 1925. The apparatus and instruments will be furnished under a war reparations agreement, whereby $2,000,000 worth of scientific equipment is to be manufactured by Germany and Austria for use in Italian public schools and universities. All of the five German veterinary schools have been improved by the erection of new buildings or the reconstruction of old ones. At the University of Leipzig, a magnificent group of college buildings has been constructed for the use of the School of Veterinary Medicine, which was moved there from Dresden, in 1923.

Although the buildings and instrumental equipment for veterinary research in Germany are still superior to those of other countries, there is a noticeable deterioriation from prewar standards in the upkeep of the extensive library collections, and there seems to be a lack of funds for the active prosecution of research projects.

I did not visit Vienna or Budapest, but officials of the International Education Board, who inspected the veterinary colleges

*Presented at the sixty-second annual meeting of the American Veterinary Medical Association, Portland, Oregon, July 21-24, 1925.

in those two cities, report a stringent need for maintenance funds, and salaries so small that the professors have to make great sacrifices to maintain the high standard of scientific work traditional in those institutions.

Switzerland

In Switzerland, where the writer spent eight months of the past year, the scientists have been second to none in achievements. Doctor Cajori,[1] Professor of Mathematics at the University of California, has shown that the proportion of Swiss who published in scientific journals, during a given period of twenty-five years, exceeded all other nations, the ratio to the total population being seven times larger in Switzerland than in the United States.

First impressions of Zurich are disappointing because of the inferior buildings and meagre equipment of the Veterinary Department of the University. On the other hand, acquaintance with members of the faculty quickly brings reassurance, and one soon realizes that it is a good place to secure knowledge fundamental to medical research, and particularly with respect to diseases of cattle. The first and last authoritative words on the subject of diseases of breeding animals have been written by professors at Zurich, i. e., in 1900, Dr. A. Zschokke,* who becomes emeritus professor this July, issued his *Die Unfruchtbarkeit des Rindes,* now out of print, which set forth for the first time in book form many of the facts fundamental to present practice in the treatment of bovine sterility; and, as the last word on this subject, a book entitled, *Patho ogical Anatomy of the Female Genital Organs and the Mammary System of Domestic Animals,* has been issued within the past six months as volume IV of the Joest series[2] by Dr. Walter Frei, Professor of Comparative Physiology and Pathology and Director of the Veterinary Pathological Institute at Zurich. Also, an additional book by Frei, on sterility in female domesticated animals, is in press.

One of the most interesting achievements in research at Zurich is Pfenninger's dissertation on the ability to influence the defense mechanism of the body against infections, with special reference to phagocytosis. He has shown that the anions Br, NO_3, Cl and I enhance the agglutinins and the opsonins in serum, both in vitro and vivo, while SO_4 decreases these phen-

*The latest achievements in research by twenty-three former students have been published in Zeitschrift zum Siebzigsten Gehurtstage von Herrn Prof. Dr. Zschokke. Art. Institut Orell Füssli, Zurich, 1925.

omena; also, the kations Ca, Mg, NH_4 and Na have an enhancing and K, Ba and Sr a depressing effect in serum. Various organic solutions were also found to have an enhancing effect on phagocytosis, i. e., turpentine, in dilutions as high as 1-600,000. On the other hand, intestinal putrefaction products, such as ethylamin and cadaverin, in dilutions of 1-150,000, reduced phagocytosis and the agglutinating power of serum for various organisms. This observation is of significance in explaining the injurious effects on animals of a so-called insanitary environment, through the introduction into the body of small amounts of putrefactive products by inhalation, ingestion, or by wound contamination.

The achievements of Dr. Anton Krupski, a meat inspector in the municipal abattoir in Zurich, are noteworthy, because they show how the routine of meat inspection may be used to accumulate data of scientific and practical value if an ambitious inspector has ability and official permission. Krupski[3] studied the genital tracts of 586 heifers and 777 cows slaughtered for beef. Thirty-two of the heifers, or 5.5 per cent, had endometritis. Persistent corpora lutea were present in the right ovary in eleven cases and in the left ovary in twenty-one cases. In fourteen cases, both horns of the uterus were equally filled with pus; in seven others, the left horn was distinctly thickened, and in eight, the right horn. Embryonic remains were observed in only seven of the thirty-two cases.

Sixty-five, or 8.4 per cent, of the cows had pyometra, and persistent corpora lutea were present in the right ovary in thirty-eight of these, and in the left ovary in twenty-two. In thirty-four cows, the two horns were equal in size. In twenty cases, the right was larger; in eleven, the left was larger. Embryonic remains were present in the right horn in eight cases, and in the left horn in three.

Krupski is gradually accumulating a vast amount of statistical data concerning pathological conditions found on the killing-floor, and at present is publishing a series of articles on the physiology and pathology of the bovine endocrine systems in the *Schweizer Archiv fur Tierheilkunde*. An extensive investigation on the relation of colibacillosis and similar infections to spotted kidney and anemia in calves is under way by Krupski, in cooperation with Pfenninger at the Veterinary Pathological Institute of the University.

The Veterinary Department of the University of Bern is housed in somewhat better buildings than the sister institution at Zurich. The work of the late Professor Hess, a famous clinician of Bern and specialist on diseases of cattle, is well known in America. Bern, as well as Zurich, has always been noted for its large number of graduate students in veterinary medicine.

In England, Holland, Switzerland and all the German-speaking countries, the doctor's degree is not immediately bestowed upon graduates from the four-year courses in medicine, dentistry or veterinary medicine, as in America, although such training and the completion of a state examination give the successful candidate the right to practice. Six months to four years of postgraduate research are necessary to secure the title of doctor. The results of this work must be presented in the form of a thesis or inaugural dissertation, of three to five hundred printed copies, which the candidate must successfully defend from the criticisms of the faculty of the department in which he has taken his work. The dissertation must show definite, original achievement, and the length of time required to earn the doctor's degree depends chiefly on that point.

The secretary of the Royal College of Veterinary Surgeons, London, stated that in Great Britain only a small proportion of the veterinary graduates undertake to secure the title of doctor—the M. R. C. V. S. being fully satisfactory, both to the practitioner and to his clients—but, on the Continent, the majority of the practitioners eventually try for a doctor's degree, as their standing in the community is raised by having the title. In Switzerland, it is not necessary that the entire time of graduate work be spent in residence at the University. The principle is recognized that the work should be done at the place where the facilities are the best, and it not infrequently happens that the routine of practice or sanitary police work furnishes a better opportunity to make observations of an original nature than the inside of a research laboratory. In any case, the work of a candidate for the doctor's degree is subject to the approval and supervision of the professor under whom he elects to work. At Swiss universities, the dissertations may be written in any language which the professor in charge can read. Many Swiss professors speak French, German, English and Italian fluently, and possess a reading knowledge of several other languages.

Many veterinarians from foreign countries go to the Swiss universities for postgraduate work. I was told that there were ninety-two graduates of the Utrecht Veterinary School who had taken the doctor's degree at Bern. One effect of the system is the production of an enormous volume of highly specialized literature in the form of inaugural dissertations. Those pertaining to animal industry and veterinary subjects are listed in the Ellenberger-Schutz *Jahresbericht der Veterinar-Medizin*, published by J. Springer, Berlin. In fact, this review lists practically everything in any way related to veterinary medicine which is published in any language.

Belgium

Next to Zurich, the writer spent more time in Brussels than in any other one city, because Dr. Emile Leynen, head of the new government laboratory for the study of diseases and parasites of domestic animals, extended hospitality and made available facilities unequaled in any other city visited.

The buildings of the School of Veterinary Medicine at Brussels are not equaled in any American veterinary institution. On the other hand, the visitor gains the impression in most of the departments that there is a deficiency of scientific equipment and that funds for research are inadequate, the exception to this being the State Animal Disease Laboratory, established in 1925, which has separate administration.

Much information was gained there; but, since the laboratory is so new, few results from its projects have yet been published. I am permitted to say, however, that several thousand calves have been vaccinated against tuberculosis with the bacillus of Calmette-Guerin, or B. C. G. This is the vaccine developed by Calmette, of the Pasteur Institute, Paris, in collaboration with Guerin, of the Pasteur Institute at Lille. The material used is an avirulent strain of tubercle bacilli which has been grown on bile media for many years. In France, it is being used experimentally on infants as well as on calves. Several years must elapse before the possibilities and limitations of the method are fully known. Extensive trials are in progress in Switzerland and Holland, as well as in France and Belgium, and Americans should patiently wait further results before accepting or rejecting the claims so far made regarding it. Calmette and Guerin claim that their bile media possesses the double advantage of enabling one to distinguish at the start whether the bacillus is

of human or bovine origin and to modify its virulence progressively as desired. It is stated that only the human bacillus will grow on human bile media, and only the bovine bacillus on bovine bile media.

Much attention is being given to diseases of poultry at the Belgian State Laboratory. Doctor Leynen has had marked success in controlling *B. pullorum* infection in fowls by the elimination of carriers of the disease through the agglutination test. Attempts at immunization against diseases of poultry are being made with d'Herrelle's bacteriophage in combination with bacterial cultures. Two publications have already been issued by Leynen[4] on paralysis in fowls due to tenia or coccidia.

The small-animal polyclinic at the Brussels School furnishes abundant material for research, since from thirteen thousand to fifteen thousand animals a year are treated. Cases of tuberculosis in dogs and cats are common. The writer is under the impression that in America the disease is relatively rare in these animals, but at the Brussels clinic scarcely a day passes without its diagnosis in one or more cases. Inquiry often develops the fact that the tuberculous animal comes from a household where there is a tuberculous person.

Postgraduate students are few at Brussels, the reason being the same as in America, i. e., that the degree of doctor is granted immediately on completion of the four-year course. On the other hand, one can rightly say that a D. V. M. from Brussels represents as much study as in any institution, because two years of university attendance is required before entrance upon the regular four-year course. So far as the writer is aware, no other veterinary college maintains such high entrance requirements as the Brussels school. It would seem that the Belgian system, as well as that of the countries of the British Empire and of the United States, does not result in the publication of as many scientific articles by the veterinary profession as in those countries where the degree is granted only as a recognition of postgraduate research achievement.

Rotterdam

About twenty-five years ago, Doctor Poels, a veterinary practitioner of Rotterdam, began in a small way to develop the production of serums and vaccines for the treatment and prevention of animal diseases. In 1904, his establishment was officially organized as a state laboratory. Through the income

from the sale of the biological products, a large factory was developed without any direct financial support from the government, and even yet it is maintained as a completely self-supporting institution. According to a printed report, the aim is to make new scientific veterinary researches subservient to agriculture, especially with regard to the contagious and infectious diseases of animals. The laboratory is noted as one of the first in the world to introduce into practical use various serums and vaccines now generally used by veterinarians. Anti-anthrax serum was produced for several years by this plant before its commercial production was taken up in America. Serums or vaccines against sixteen diseases are now manufactured. Director Lorens, the present head of the laboratory, stated that he considered the vaccine and serum against swine erysipelas to be the most effective and satisfactory of all the immunizing agents produced.

The work of the laboratory is organized under twenty-four sections. Some of the more interesting and unusual are the section on diseases of fish, diseases of rabbits, diseases of bees, bacteriology of the soil, hydrological section, extermination of rats and mice, examination of secret remedies and the examination of milk. One of the activities of the last-named section consists in the preparation of autogenous bacterins from specimens of pathological milks submitted by veterinarians. *B. pyogenes* (Grips) is said to be a very frequent cause of mastitis as well as of joint disease and pneumonia in cattle. Milk from udders infected with this organism is said to have a characteristic odor. The infection is treated by repeated subcutaneous injections of heavy suspensions of killed cultures given in 10-cc doses. Valuable cows are also given anti-pyogenes serum. This serum is prepared from cattle immunized as follows: At first, subcutaneous injections of killed cultures are given at intervals of one week, the dose being increased from 10 to 30 cc of a heavy suspension. After a total of 100 cc of killed culture has been given, small doses of live culture are injected, which are gradually increased until 20 cc of a heavy suspension can be tolerated by the animal without showing a marked local reaction.

Diseases of poultry have an important place in the activities of the Rotterdam laboratory. This work is in charge of Dr. B. J. C. teHennepe, one of the greatest living authorities on

diseases of fowls, and particularly of ducks, as duck-raising is an important industry in parts of Holland.

Leyden

The medical school of the University of Leyden is one of the few institutions of the world that maintains a department exclusively for teaching and research concerning diseases and parasites of animals transmissible to man. The professor in charge is Dr. D. A. DeJong,* well known to many American veterinarians, since he served for years as secretary of the International Veterinary Congress. The staff of the Department of Comparative Pathology includes, besides the director, a veterinarian, a physician, a chemist and a zoologist. The researches of this staff have contributed much to knowledge concerning tuberculosis in various species. The action of tuberculin and its so-called sensitizing phenomena are now being studied. DeJong has observed that, when guinea pigs are injected with tuberculin, about 80 per cent of them subsequently become reactors. This, DeJong said, is contrary to the assertions of other investigators. We were shown a calf which had just received an intravenous injection of an isotonic solution containing 70 grams of crude tuberculin. Dr. DeJong said: "We shall see if this animal does not later become a reactor, although remaining free from the disease."

Other investigations under way include studies on the effect of low temperatures on bacteria and protozoa. It has been observed that non-sporulating bacteria and also trypanosomes are not killed by exposure for several hours to temperatures as low as —250° C. Smallpox vaccine, for use throughout Holland, is manufactured at the Institute.

It has recently been discovered that stomatitis contagiosa equi is transmissible to cattle, and that the lesions are typically those of cowpox. This latter disease has also been transmitted to fowls, the resulting lesions being similar to epithelioma contagiosa, or the skin form of avian diphtheria. This observation has also been made by Van Hilsberger, at Utrecht, and Zwick,[5] at Giessen. The cellular inclusions typical of epithelioma contagiosa are absent from the cowpox lesions in fowls.

Utrecht

The Netherlands Veterinary School, at Utrecht, is one of the best equipped in Europe. The Department of Anatomy is

*Since this article was set up, word has been received of the death of Dr. DeJong. Editor.

especially well housed in a new building, with elaborate apparatus for teaching and research not only in gross and microscopic anatomy, but also in embryology and endocrinology. This last-named subject seems to have become of special interest to anatomists the world over.

The small-animal clinic buildings at Utrecht are said to be unequalled for their purpose. The laboratories and wards excel in modern conveniences any facilities in the medical school. About eight thousand dogs a year are treated at this institution. In Holland, dogs are much more numerous and highly prized than in America. In some of the Dutch cities, one may go for blocks without seeing a horse or even an automobile, but dog-drawn carts are usually in view.

Germany

In 1914, Germany led the world in the completeness of her equipment for research in animal disease, and the writer is of the opinion that so far as fine buildings, expensive furnishings and elaborate instruments are concerned, she is even farther ahead of other nations than in 1914. At every one of the German colleges, however, the writer heard complaint of a deficiency of funds for purchase of experiment animals and foreign books and periodicals.

Probably the most promising information gained during a stay of one month in Germany concerned methods for the diagnosis and control of equine anemia or swamp fever. Opperman, of Hanover, has developed a diagnostic test for the disease, based on rabbit and pigeon inoculation and the agglutination of red blood corpuscles. He calls it the hemagglutination test.* Up to May, 1925, about thirty thousand blood samples had been tested at the Hanover laboratory. It is claimed that the disease is much more prevalent in Germany than had been supposed, and that many cases of abortion in mares and navel infections in foals with *B. coli* and streptococci are merely secondary to the injuries caused by anemia virus. Experiments at Hanover and Potsdam have shown that the virus may remain alive in soil for seven months.

One is impressed with the great variety of new and complicated laboratory apparatus in the various German laboratories. At Leipzig, the radiographic room of the surgical clinic contained a special X-ray equipment for large animals, another special

*The writer will send a description of the technic to any laboratory on request.

equipment for small animals, and various types of apparatus for heliotherapy.

At Hanover, the X-ray equipment in use had been loaned by the Notgemeinschaft für Deutsche Wissenchaft, an organization for the help of German scientists whose work has been seriously impeded through war and post-war conditions.

The great optical works of Zeiss and Leitz have announced several instruments recently which are of interest to laboratory workers. The new Zeiss interferometer is being tried out by various zootechnicians as a means of diagnosing pregnancy from samples of serum fermented with placenta according to the Abderhalden formula. The modification of the test through the use of the interferometer seems to promise better results than the original method described by Abderhalden.

Another interesting instrument is the Köhler-Zeiss all-quartz lens ultramicrophotographic apparatus, with which Frosch took the photographs of the causative organism of bovine pleuropneumonia. His claims to have photographed also the organism of foot-and-mouth disease have not been verified.

At various clinics, we saw hundreds of cases of parasitic skin disease in dogs. A new remedy, called *odylen*, is being distributed by the Bayer Co. My only excuse for mentioning it is the universal praise which it was receiving at every canine clinic visited.

The testing of samples from imported hides for possible anthrax infection is one of the important routine activities of diagnostic laboratories in Germany. The Ascoli precipitation test is used. In speaking of the accuracy of this method, Doctor Giesse said that in carefully checked trials on fresh hides, salted hides and dried hides, known to have come from infected animals, the Ascoli reaction had given results of 100 per cent accuracy.

At Giessen, we were shown an ingenious device for the treatment for fistulous withers and similar deep-seated infections, devised by Dr. M. Westhues, assistant in the surgical clinic. It consisted of a large rubber suction-cap fitted tightly over the wound. Suction is produced by means of a small rubber tube attached to a water suction-pump, such as is to be found in most laboratories. The excellent drainage and exudation of fluids from the wound secured by the suction process produced remarkably quick healing, it was claimed.

Dairy inspection and the control of the bacterial content of milk supplies is not so extensively organized in European cities as in America. This is hard to account for, particularly in Ger-

many, where most matters pertaining to public welfare are regulated in great detail, and also in view of the fact that the teaching of the technic in dairy bacteriology and chemistry and the theories of milk hygiene are highly developed, especially in the veterinary schools.

A solution to the important problem of differentiating properly pasteurized from under- or over-pasteurized milk will probably soon be published by Bongert and Hock, at the Veterinary School in Berlin. They first secure a clear serum from the milk sample under test by coagulation with rennet and filtration. To the serum is then added a light-sensitive chemical, which has been found to combine with certain proteins of the serum, provided the milk has been heated between a temperature of 50° and 70° C. On exposure to light, no color change occurs. On the other hand, if the milk serum is from a sample of raw milk or from a sample of cooked milk, a pronounced darkening of the mixture occurs on exposure to light for a few minutes. The exact composition of the light-sensitive chemical will eventually be made public. The method appears to be superior to the Storch reaction and similar methods which are used for the detection of cooked milk.

Immunizing to Abortion

Following are notes on the procedure in various countries, in the use of vaccines against Bang's abortion disease:

For over a decade, the Veterinary Laboratory of the British Ministry of Agriculture has distributed live abortion vaccine. The procedure, as explained by Sir Stewart Stockman to the writer, is to grow the organisms in 1 per cent glucose bouillon until they have reached the optimum development. The live cultures are then distributed for use on non-pregnant animals only, the advice being to wait at least two months before permitting a bull to serve the vaccinated cow. The dosage is 50 cc given subcutaneously. No abscesses are reported, even when the 50 cc are injected at one point. Stockman suggested that the abscesses reported by American workers might be due to contamination of the vaccine by anerobic bacteria. About thirty thousand doses are distributed annually, through veterinary practitioners, the purpose being to accumulate information as to the results. Accurate reports with complete case histories were difficult to obtain, since it had proved impracticable for the

practitioners to return again and again to a herd, in order to observe results on individual cows.

At the University of Giessen, Zwick and his associates have made some noteworthy observations concerning bovine abortion, e. g., *B. coli* infection has been observed to produce abortion in cows. Doctor Witte,[6] an assistant to Zwick, has devised an agglutination test for determining the presence of *Vibrio fetus* infection, and he has found that the accuracy of the complement-fixation test for *B. abortus* is improved when unheated serum is used.

Zwick stated to the writer as follows:

> "We use living cultures only in herds that have been thoroughly tested, and we inject pregnant cows only in case their serum reacts positively by the agglutination and complement-fixation tests. Non-pregnant animals and pregnant animals up to the fourth month of pregnancy receive a dosage of 20 cc of living bouillon culture subcutaneously, and are injected three times at intervals of fourteen days. Cows more than four months pregnant receive two injections of 30 cc of killed culture and then 20 cc of living culture, all injections being made at fourteen-day intervals."

The time limit for this paper does not permit mention of all the veterinary colleges visited by the writer during the past year. The French and British have been omitted, because their excellent work is fairly well known to many members of this section of the A. V. M. A.

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DISCUSSION

DR. WARD GILTNER: This is a most unusual paper, at least the part of it we have had the pleasure of hearing.

I am reminded of an amusing little incident that occurred on the train coming over here. Two or three of those present were on the train. There was a fellow by the name of Hill on the train, a great, big, deep-voiced fellow. He had crossed the Atlantic ninety-nine times or so; he had been over to the Orient several times; any place in the United States that anyone mentioned, he had been to and could talk about. There was a veterinarian aboard who had listened to his talk of different places for some time, and finally asked him: "Say, did you ever have the delirium tremens?" The reply was: "No, why?" The veterinarian said: "Hell, you haven't seen anything!"

I just wanted to arise to demand that the officers of this section see to it that this paper is printed in toto in the JOURNAL. I know that Dr. Haring has mutilated it beyond recognition, and I am sure that the parts he has crossed out and not given to us are equally worthy of our having the opportunity to read.

There is just one other thing. It is a great pleasure to have Dr. Haring tell us what he said to our President at Michigan State College about Leipzig, where he visited. He will correct me if I do not quote him correctly. He said of the Veterinary College and its equipment: "It is finer than that of any medical college in the United States."

DR. HARING: I might correct that by repeating exactly what was said. I had the privilege of visiting this institution with an official of the International Education Board. After going through these magnificent buildings, he said: "I have seen Harvard Medical School, the equipment of which is probably unequaled in America, and there is no laboratory in the Harvard Medical School to equal this," when he was speaking in one of the laboratories.

DR. HUGO HARTNACK: I might mention my experience, that the Ascoli test gave one hundred per cent dependable results. The tests with the microscope, by experiment animals and cultures have their limitations. With all the methods applied together you may get negative results in a positive case. Personally, I have examined hundreds of anthrax cases, using a combination of all diagnostic procedures, and have not observed a failure with the precipitation test. Even in local anthrax of hogs, where the date of infection was, perhaps, years back, and in cases where carcasses of cows had been in the soil for months, the precipitation gave a pronounced positive result. The precipitation test has the added advantage, that it can be applied by every practitioner, who does not own a microscope, by using a special, very inexpensive apparatus that is in vogue in Central Europe.

DR. HARING: May I ask whether it is necessary for us to send to the Ascoli Institute in Italy for the serum used in making this test?

DR. HARTNACK: No, Doctor, it will not be necessary. We, in our institute, prepared the serum ourselves, but you may procure it from the manufacturer, Gans, in Oberursel, near Frankfort-on-Main, as far as I remember.

SECRETARY PICKENS: I might say just a word about our experience with the test. Several years ago, we did some work with it, probably testing about two hundred cases of suspected anthrax. We also made some precipitating serum. We had a great deal of trouble in the preparation of this serum. We first tried guinea pigs, but did not obtain a good serum from them. We next used rabbits, with a little better success, finally obtaining two rabbits that produced a satisfactory serum. We also produced a satisfactory serum from one horse.

I would like to ask Dr. Haring if he obtained any information on Dr. Smith's work with *Bacillus tumefaciens*.

DR. HARING: All I know about it is what Dr. Erwin F. Smith has published in *Science* and various other magazines. At the Citrus Experiment Station, Riverside, Cal., where some work was done, they had already recognized practically everything that Smith said about plant tumors. I am not impressed that tumors on plants have very much relation to cancers in animals.

REFRIGERATOR EQUIPMENT INSTALLED

The College of Veterinary Medicine of the State College of Washington recently completed the installation of refrigerator equipment to meet the needs of the departments of Anatomy and Bacteriology. A box 3 by 3 by 4 has been installed in the pathological and bacteriological laboratories for the storage of bacteriological products.

The Department of Anatomy has a room 6½ by 11, 9 feet high, in which anatomical material may be kept in the intervals between laboratory periods. Dean Wegner reports that it has not been entirely satisfactory to try to keep anatomical material at room temperature, even after it has been embalmed, and it is hoped by the installation of the new equipment to eliminate the objectionable features that usually attend the study of anatomy.

VETERINARY MEDICINE AND VETERINARIANS IN GERMANY: EDUCATION, PRACTITIONERS, STATE VETERINARIANS AND SANITARY VETERINARIANS

By HUGO HARTNACK, *New York, N. Y.*

A paper such as this must involve, to a certain extent, a comparison of conditions in Germany with those in the United States.

Striking differences will be apparent, but, strange to say, the number of veterinarians who are actually practicing veterinary medicine is about the same in the two countries. When, however, we compare the number of domestic animals in the United States and in Germany, a remarkable contrast is revealed. The following figures are given in the last Yearbook of the U. S. Department of Agriculture.

	UNITED STATES	GERMANY
Cattle	88,000,000	16,500,000
Horses	20,000,000	3,600,000
Mules	5,600,000	27,000
Sheep	38,000,000	6,000,000
Swine	Four times as many in the U. S. as in Germany.	

How can Germany, with only a sixth part of the animal wealth of the United States, support the same number of veterinarians, while this country seems to be oversupplied with them?

It is also a remarkable fact that, while the number of students of veterinary medicine in the United States has decreased considerably in the last decade, the building of a new veterinary college is being planned at the University of Tuebingen, in Germany. But it is not only from the economic standpoint that the whole question of the veterinarian and veterinary practice in Germany is of significance. Some acquaintance with conditions in Germany is important also because many textbooks used in this country are translated from German and they may con-

*Presented at the sixty-second annual meeting of the American Veterinary Medical Association, Portland, Oregon, July 21-24, 1925.

tain allusions which cannot be understood without some knowledge of the situation in that country.

As the origin and growth of our profession is entirely the result of a certain economic development, agricultural and economic conditions must be touched upon before discussion of the other matters to be considered in this paper is taken up.

Economic Conditions as Factors in the Development of Science

Nineteen hundred years ago, a Roman author named Tacitus travelled in Germany and wrote a book on his observations. In discussing the origin of the German people, he expressed the opinion that they must have lived in Germany since the beginning of time as he could not imagine the existence of a still worse country from which they might have emigrated to improve their condition.

Nevertheless, before the war, seventy millions of inhabitants lived in this country which had not become fertile in the course of nineteen hundred years. The area of Germany is but a thirteenth part of that of the continental United States, and to realize the density of its population, one must imagine the forty-eight states inhabited by nearly one billion people.

As a result of this density of population, wages became very low, and materials very rare and expensive. The very deficiency of materials led to tremendous competition in the invention of new methods of saving and utilizing everything that could possibly serve any useful purpose. Every one knows the name of Liebig, for example, who founded agricultural chemistry. Such a science was important only for an infertile country with an exhausted soil. A high development of every method of saving and utilizing material was necessary in Germany to make it possible for such a large population to live in such a small country. Methods for saving and utilizing materials, for example, have been raised to the dignity of sciences, as chemistry and forestry. Coal tar is but one of many examples illustrating how the desire to utilize waste products has led to the development of sciences.

The writer has heard the question raised in this country as to whether crowded conditions are not essential to the development of certain sciences. It would appear that there is only a certain amount of truth in this idea. Crowded conditions are conducive to intensive rather than to extensive work. Intensive

work on a scientific basis always brings results, as is to be seen, for example, in the research activities in anthelmintics in this country, where, by the use of methods of the utmost thoroughness to establish the value of anthelmintics, veterinary scientists have done extremely important work.

Veterinary medicine and its development is, to a very high degree, influenced by the comparatively high value of animals. Scientific research work in meat inspection, for the purpose of discovering ways of using, with safety, diseased and weak animals for food, was organized first in Germany by von Ostertag, who is an honorary member of this Association. In practice, the low wages paid to the veterinarian together with the high price of animals made it profitable to employ the veterinarian to save the animal. It paid, for the same reason, to give the veterinarian the best possible education—as expensive as that of the judge, physician or lawyer.

The Education of the German Veterinarian

The education of every German student begins in his seventh year, when he enters the public school, where he remains for four years, after which he attends high school for at least nine years. At the age of nineteen, if he continues with his class, he must take an examination which lasts about two months. His career as a schoolboy is then concluded.

He may study law, which takes three years, or medicine, which requires five years, or, among many other possibilities, veterinary medicine, which covers a period of four and one-half years. There are three veterinary colleges in Germany which are connected with universities, and two separate colleges, making five centers for the study of veterinary medicine. The small number of these institutions makes it possible to secure good teachers and to employ specialists for each branch of veterinary medicine, each working only in his particular limited field.

It is supposed that by the age of nineteen, one does not need supervision, but realizes for himself the importance of attendance or non-attendance at college sessions. A German student who does not possess the self-control necessary for starting work for his examinations at the right time is badly off, since no one is concerned about his progress. The professor, too, who gives uninteresting lectures is in a bad way, since sometimes only three or four out of one hundred students will attend his classes, most of them preferring to gain their information from books before

taking their examinations, rather than from the lectures of such a man.

It is a different matter with the practical exercises. It is not expected that a student will attend every session, and his attendance is not recorded, but he has to carry through a certain number in each branch of the work. For example, in anatomical practice, he must have the signatures of the assistants to prove that he has really made the various dissections—about thirty different operations. Other exercises are in physiology, milk-testing and horseshoeing, and include visiting the various clinics, treating the different kinds of animals, performing certain surgical operations, normal and pathological histology, etc. There are two examinations during the four and one-half years of study. Within certain limits, the student chooses the time of examination for himself, when he thinks he is sufficiently prepared. The first covers botany, zoology, chemistry and physics, and is ordinarily taken at the end of one and one-half years; the second is in anatomy and physiology after two and one-half years.

The government examination which is required after four and one-half years of study covers all the rest of the field of veterinary medicine, including husbandry, clinics, operations, pathological anatomy and pathological histology, ophthalmology, legal veterinary medicine, horseshoeing, meat inspection, obstetrics, bacteriology and parasitology, and demands practical as well as theoretical knowledge. One exercise in clinical work, for instance, sometimes occupies a whole week. The whole examination, when passed successfully, takes from three to six months.

Having passed his examination, the student becomes a full-fledged veterinarian. He has the right to practice veterinary medicine in every locality and state of the Reich, and to examine meat in the district for which he has applied and which is assigned to him. He does not, however, receive the title of "Doctor." This title confers no further privileges, but nevertheless there are very few physicians or veterinarians who fail to apply for it. Its attainment requires from three months to a year. The thesis, called in Germany the "inaugural dissertation," is, in the writer's opinion, a very valuable supplement to the regular courses in the education of a veterinarian. Among the many matters not included in the curriculum of the veterinary college are the performance of scientific work, the judgment of scientific work, and practice in availing oneself of existing literature and setting

forth one's opinion clearly and in acceptable form, ready for publication.

Furthermore, in preparing his dissertation the veterinarian spends a certain part of his life in the service of the state, in furthering veterinary science, carrying out the same principle as that involved in military service. Of course, the work of a student in science is not as valuable as that of an experienced scientist, although there have been inaugural dissertations which have become famous. But many professors are confronted with scientific questions which, though of minor importance, must be answered, and in the investigation of which the help of the young veterinarian is very welcome. The German title "Doctor Medicinae Veterinariae" is abbreviated "Dr.med.vet.," and is placed before the name.

The Veterinary Practitioner

Generally, after he has spent one or two years as an assistant, the veterinarian establishes his own practice, which is very different from what it is here. Canine practice is of little importance, and the services of the veterinarian are limited to animals which create economic values. Animals are of higher value in Germany than in the United States, while the wages of the veterinarian are nearly the same in Reich marks (valued at twenty-three cents) as they are here in dollars. Therefore, the veterinarian is called upon much more often than here. To extend his practice, he takes every kind of work, and especially endeavors to eliminate the professional hog-spayer and horse-castrator. To avoid the cutting of rates, fees are very often established by agreement or even by the Chamber of Veterinarians.

But all these measures would not be sufficient to ensure the support of such a number of veterinarians were it not for two lines of work which have proved to be of the utmost importance for the profession and which are indeed its dorsal vertebrae—meat inspection and the vaccination of hogs for erysipelas.

The first step taken by a veterinarian, before he establishes himself in a village or a city, is to make sure that he will have the function of meat inspection. This arrangement is of mutual advantage, since it secures to many centers, which would otherwise never have a veterinarian, the advantages of such service. Seventy-five per cent of all veterinary practitioners are also employed in meat inspection.

It was of the utmost importance for the German veterinary profession that when it became necessary and possible to establish meat inspection, a veterinary scientist, Ostertag, who was later elevated to the nobility with the title von Ostertag, did the necessary scientific work, established an organization, and suggested meat inspection laws. Before this time, meat inspection had been in the hands of physicians, but the efforts of von Ostertag effected the change within a few years. No one knows better than American veterinarians the significance which his work has had for the profession in this country.

Erysipelas is not only a very important disease of hogs in Germany, but it is the most important. There are four different varieties of the malady, all caused by the same bacillus. Nearly all hogs are vaccinated against this disease in the spring and the effect lasts from five to twelve months. Since, by law, the use of the living bacilli is entirely in the hands of veterinarians, quacks do not furnish an important problem for the practitioner.

Tuberculosis eradication means very little to the veterinarian in Germany as compared with its importance here. In the writer's opinion, the German system of eradication is unsatisfactory.

Diploma-agriculturist Most Serious Problem

On the other hand, the practitioner has a multitude of enemies, among whom may be mentioned the druggist, who is bitterly opposed to the principle of allowing the veterinarian to sell veterinary pharmaceuticals to his cilents. The "Diploma-agriculturist," corresponding somewhat to the county agent in this country, presents the most serious problem. Having some knowledge of veterinary medicine from study and hearsay, he regards himself as an unquestionable authority on the subject. Dairy supervision is generally in the hands of "Diploma-agriculturists" and food chemists. The animal husbandman is a dangerous element. This profession has grown up through efforts in Germany to cultivate pure breeds of animals. Unfortunately, the veterinarians have not had a man like von Ostertag in this field, but only the services of very incompetent professors in Prussia, and it is the general opinion that leadership, and even practically any influence at all, has therefore been lost in the province of animal husbandry.

At present, the husbandmen claim for themselves the whole field of animal industry, and the veterinarians have become in their eyes merely men whose function it is sometimes to cure

diseased animals under their supervision, and whose standing is entirely inferior to theirs. A delegation of five representatives of the German Department of Agriculture spent the whole of the past summer studying conditions in this country; they represented each branch of agricultural service but there was not a veterinarian among them. Experience in Germany, as well as in other European countries, leads to the conviction that, without supremacy in the field of animal husbandry, the veterinarian is forced to occupy an inferior position. His professional standing is impaired, and he has to face many disagreeable situations, and is prevented from demonstrating and developing his ability in many fields, thereby reducing his income and greatly retarding his professional progress.

THE SLAUGHTERHOUSE, SANITARY OR COMMUNITY VETERINARIAN

Slaughterhouses in German cities are usually the property of the community, and therefore the veterinarians in charge are employes of the community. The younger men can be dismissed with a month's or three months' notice, while the older veterinarians are employed for life.

In these abattoirs the duties include not only veterinary service, but also general management, employment of necessary helpers, supervision of the trichina inspectors (barbers, invalids, small farmers), accounts, machinery, etc. Furthermore, the inspection of food- and fish-markets is sometimes in the hands of these veterinarians. Seldom do they have to deal with dairy work, and the struggle of the veterinarians for milk inspection is in most cities decided against them and the authority placed in the hands of the food chemists and "agriculturists."

In small communities, besides his official duties, a veterinarian of this class is allowed private practice but, in larger cities, this privilege is not granted.

THE STATE VETERINARIAN

The goal of every German veterinarian is the office of state veterinarian. There are about four hundred fifty of these officials in the country, whose principal duty is the control of infectious diseases. The tenure is for life, and the office insures the incumbent a pension equal to three-quarters of his salary. Besides his income from the state, practically every state veterinarian is allowed to practice independently, and also has an opportunity to add to his resources by giving testimony, by market supervision and by inspection of animals before or after shipment.

To obtain this office, the candidate must undergo a very difficult examination, for admission to which he must bring proof that he has practiced at least three years since his graduation, has pursued courses of three months each in bacteriology, pathological anatomy and histology, and the control of infectious diseases. Furthermore, he must have worked for three months in a slaughterhouse in which, besides the director, at least two veterinarians are employed. Then he is admitted to examination before the Department of Agriculture in Berlin.

He has first to write two scientific papers in the field of control of infectious diseases or veterinary hygiene. The themes are assigned to him by the Department, and six months are allowed for preparation of the papers. After they have been approved, he undergoes an oral examination, which covers the whole field of state veterinary medicine, including animal husbandry and horseshoeing. There are numerous practical exercises in pathological anatomy, pathological histology, bacteriology and bacteriological meat inspection, serology, and legal veterinary medimedicine.

Only a small percentage of those who take the examination become state veterinarians, but the very fact that they have taken it proves that they have a better and more comprehensive veterinary education than the average practitioner, and they are also preferred for positions such as that of manager of a slaughterhouse.

The present office of state veterinarian is not regarded as the ideal solution of the problem because the man who holds it is partly a practitioner and partly a state employe, a situation which sometimes places him "between the devil and the deep sea."

Summary and Conclusions

Much has been accomplished in veterinary medicine in Germany. Nevertheless, if the work could be done over again, in my opinion many things would be changed so as to allow a still larger number of veterinarians an opportunity for a livelihood, to improve the general conditions, and to make veterinary education a foundation for a more extensive part in animal industry.

The veterinarian has considered himself too much as like the regular physician, limiting his function to the treatment of animals, and has consequently lost the leadership in animal

industry, dairy work, husbandry, bee and poultry industries, supervision of horseshoeing, etc. As demonstrated in the organization of meat inspection, scientific work at the right time has proved a foundation for activity in a larger field.

DISCUSSION

DR. C. M. HARING: It seems to me that the paper just read mentions several points of significance in connection with our own problems that have been discussed so extensively at this convention. If American veterinarians were callled as frequently as German veterinarians, the present veterinary colleges of this country would not be able to supply enough practitioners; you would have to establish additional colleges.

It seems to me that one reason why these calls are so frequent in Germany is that, if an animal is sick the owner is permitted to slaughter this animal for food subject to postmortem examination by an official veterinarian. So that when an animal becomes sick the first thing the owner thinks is that he must get a veterinarian to find out whether this animal is going to live or going to die. That makes prognosis of primary importance in the work of the practitioner in the German-speaking countries.

I believe many years hence this country will come to that; perhaps we are a long way from it yet, but as veterinarians we must realize the fact that many sick animals, and perhaps occasionally dead animals, are put upon the markets because we have no system of meat inspection for a large part of the rural sections of our country. That offers a remarkable field for veterinary service in America which, as yet, is untouched.

THE HARDWARE DIET

Baby swallows nail; suffers no ill effects.

—*N. Y. Mail and Telegram.*

Ambition now will seize the child;
Undoubtedly, he'll now be wild
For other magic stunts to do.
He'll swallow next a four-inch screw,
A chisel and a railroad spike,
And other hardware he may like.
And when his tummy hurts him—ah!—
You'll hear him loudly wailing, "Ma-a-a-a!" —
A cry that often leaves the throat
Of my little billy-goat
That eats the things that baby did;
But, oh, the goat's a luckier kid,
For he has special insides which
Know how to handle steel and sich.

—E. A. in *Farm and Fireside.*

Fly repellents may make cows and milkers more comfortable, but they do not increase the milk flow, according to recent investigations.

ARTERIOSCLEROSIS IN DOMESTIC ANIMALS*

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In the human subject, as a result of variations in blood-pressure and continuous work, there develop sooner or later a wearing-down of the elasticity and changes in the caliber and the strength of the vascular walls. These changes are considered partly as a physiological process and partly as a pathological affection, since they are said to be due to various toxic products.

Arteriosclerosis is described as a fatty degeneration of the intima with proliferation. Calcification or petrifaction of the media may occur secondarily to atheroma or may be primary, as is common in old people in the arteries of the lower half of the body. It occurs in the form of rings that were compared with the trachea of the goose. Individual cases are on record where the media of the entire arterial system was calcified, one in a two-day-old child, hence described as congenital.

The typical atheroma is a yellowish-white area of fatty degeneration in the intima and spreads as a fatty degeneration into the elastic fibers of the media. This is followed by a regenerative, compensating reaction of the intima, so that we get a thickening by proliferating connective tissue.

The etiology is as yet not clearly explained. The mechanical and chemical theories of this affection have been substantiated by the experimental production in rabbits, by adrenalin, hydrastin and numerous other toxic products, of a degeneration of the aorta, which may be due to increased pressure, to the effect upon the vessel-wall or to both of these effects at the same time. These experimental cases are unlike arteriosclerosis in man, but are necroses of the media with calcification, and may be followed by proliferation of the intima. Such changes occur also in man, but do not represent the usual form of this disease. A Russian investigator finally succeeded in producing early changes of arteriosclerosis in rabbits by feeding cholesterin.

These complicated, chronic, senile changes do not occur in the short-lived domestic animals in exactly the same form or with the same frequency. There are, however, cases that are at least similar.

*Presented at the sixty-second annual meeting of the American Veterinary Medical Association, Portland, Oregon, July 21-24, 1925.

Lyding[2] encountered changes in the aorta in thirty-five out of a hundred cattle. They consisted of circumscribed thickenings, in flat or slightly concave, yellowish-white elevations in the intima that histologically showed a hyaline degeneration, fatty and calcified deposits alongside of fibrous proliferations of the intima. He observed similar changes in the horse and in the dog, where these senile changes are mostly to be expected. He found a high-grade, fatty degeneration of the media with marked deposits of cholesterin, in two cases, in the carotid and in the aorta.

In the etiology he suggests bodily exertions at grazing and draft, as well as toxic influences and nutritive disturbances, brought about by intensive breeding and constant wearing in milk-production, together with poorly ventilated and dark barns.

According to Kitt, dirty-white, calcified spots in the auricles, as well as in the semilunar valves, are not rare in cattle, particularly in conjunction with tuberculosis. He described a case of irregular masses, in the pockets of the aortic semilunar valves of a horse, that were due to *Strongylus* larvae or to infection. He named the condition *arteritis fibroplastica petrificans* or *petrificatio atheromatosa verrucosa*. He cites a case of Bollinger of *endoarteritis villosa verrucosa* at the origin of the aorta, next to the semilunar valves, and a case of a similar condition in the portal vein, namely verrucose endophlebitis.

Kitt claims that the most common condition in the aorta of cattle consists of the calcified fibrous deposits in the form of round or oblong, sharply circumscribed plaques. Because of their resemblance to scales or fins, he named this condition *petrificatio scutellata aortae*. In other cases, besides flattened plaques, there are gravelly, sandy, irregular protuberances, *petrificatio dispersa aortae*. Tubercular petrifaction has been described in tuberculous cattle and a tuberculous horse that is said to be an eruption of tubercles into the media under the intima of the arteries.

Kitt also observed small calcified islands in the endocardium and intima of the aorta and pulmonary arteries in swine.

Calcification of the wall of the aorta is a common occurrence in old birds, according to Hutyra and Marek.

Lignieres describes an enzootic among sheep in Argentina, where there was an ossification of the lungs with arteriosclerosis. The latter lesion consisted of a marked irregular thickening in

the aorta, in and near the pockets of the semilunar valves, caused apparently by an infection of an intestinal origin.

In nearly 2000 autopsies, including practically all species of domesticated animals, eight cases were encountered in which arteriosclerosis was either directly or indirectly responsible for the death or destruction of the animal. It is quite likely that some cases were missed, particularly where the lesions were minute or in the early stages of the disease. They are presented in order to show that this condition is not so very rare in domestic animals, and because they may throw some light on this condition in the human subject.

Case 1

A four-year-old brown mare (74), weighing about 1200 lbs., that was operated upon for fistulous withers seven days prior to death. She was apparently well up to the time of death, but died suddenly.

Autopsy showed that she was in fair condition, as judged by subcutaneous and omental fat. The mesenteric lymph-nodes were swollen and congested. The omental lymph-nodes in the region of the spleen were hyperplastic. There were several *Filaria equi* in the peritoneal cavity.

The spleen was enormously enlarged, weighing 24 lbs. It was 63 cm. long, 35 cm. wide and 24 cm. thick, and contained scattered nodules ranging in size from 1.5 to 15 cm. in diameter protruding on the surface. On section these were greyish white, cellular, and contained numerous calcified areas. Some of the nodules were surrounded by calcareous material.

Histologically, these nodules were composed of lymphocytes and few giant cells with necrosis and calcification, apparently *nodular hyperplastic splenitis* with calcification.

The liver showed slight chronic interstitial hepatitis and perihepatitis.

The pancreas was markedly congested and contained an area of hemorrhage 3 cm. by 2 cm. (suggillation).

The kidneys showed an acute parenchymatous nephritis.

The digestive and reproductive systems appeared normal.

Both apical lobes of the lungs showed marked vesicular emphysema.

In the heart, there was hypertrophy of the wall of the left ventricle. There were ecchymoses in the endocardium in the apex of the left ventricle. The mitral valves were thickened by connective tissue. The aortic semilunar valves were stenotic due to two areas of calcification about 1 cm. in diameter, partially uniting two cusps. Beginning at the semilunar valves, the entire intima of the bulbus aortae and of the aortic arch was corrugated and roughened by fine calcareous points projecting from the surface. The thickening and hardening of the intima extended into the coronary arteries, the common brachio-cephalic trunk, the thoracic aorta and into the left brachial artery. The branches of the brachial arteries were calcified as far as the digital arteries. In the thoracic aorta, it extended for a distance of about 30 cm., the amount of calcification gradually diminishing until it reached this point. The common carotid and its branches were not affected. In the coeliac artery, the wall was thickened. In the intima there were two erosions, each about 1 cm. in diameter, and a few very minute calcareous areas the size of a pin-point. The intima of the pulmonary arteries of both lungs was hardened by plaques of calcified material resembling the carapace of a turtle. This began about 5 cm. from the pulmonary semilunar valves and extended as far as the terminal arteries (figs. 12 and 13).

All other arteries were apparently normal. In the brain, the meninges were slightly hyperemic. About 100 cc of colorless liquid escaped from the spinal canal.

In the withers there were fistulous tracts extending into the shoulder. There were numerous calcified areas in the subscapular connective tissue. There was also marked subcutaneous edema in that region.

In the coxo-femoral joints the synovial membranes were thickened by reddened, fibrous tufts. The articular cartilages were smooth and shiny, i. e., normal. The other joints were apparently normal.

No verminous aneurisms were found in the arteries. No strongyli were found either in the arteries or in the intestines.

Case 2

An aged bay mare (145), used for surgical exercises. Previous physical examination showed an increased vesicular murmur at the ventral and diaphragmatic borders, with crackling rales. The right chest showed the ribs well sprung with increased resonance. The heart showed a pounding impulse, the second sound being louder and more prolonged. The animal died after administration of a few drops of chloroform.

On autopsy, the pericardial sac was distended by about five liters of serosanguineous liquid and a large clot of dark blood. The endocardium of the right ventricle was slightly roughened. There was a rupture of the coronary artery with a large hemorrhage, in the mass of fat at the base of the heart, between the right auricle and the vena cava. The coronary arteries and the aorta, at the emergence of the coronary vessels, show the intima roughened with calcification in the media under the intima. The rest of the heart appeared normal. There were several verminous aneurisms in the mesenteric arteries.

Both kidneys showed nephrolithiasis, the largest calculus being 2 cm. in diameter. The urinary bladder contained a large amount of greenish, gritty material, with a chronic thickening of its wall.

The liver showed slight cirrhosis with fibrous tufts over the spleen and diaphragm. Adult strongyles were found in the cecum and colon.

Diagnosis: Immediate cause of death—rupture of coronary artery. Fatal illness—arteriosclerosis. Other lesions—nephrolithiasis.

Case 3

A 22-year-old grey mare (D30) became weak and suddenly collapsed. Autopsy showed petechiae throughout most of the organs. The left ventricle of the heart was dilated and the wall thinner than normal. The mitral and tricuspid valves were normal. The aortic semilunar valves were thickened and hardened by roughened calcified nodules.

The aorta was apparently thickened and the intima wrinkled throughout. The extreme end of the aorta and the iliac arteries showed concave, calcified plaques with the lumen widened (fig. 6).

Histologically, the myocardium showed marked degeneration, increase in intermuscular connective tissue, with hyaline degeneration of the same. The aorta showed disappearance of the elastic fibers, beginning apparently around the vasa vasorum, with marked hyaline degeneration in areas and proliferation of connective tissue in the intima and calcification in the media. There appeared to be some fatty degeneration in the intima in places.

Case 4

A cow (110) that freshened about six months previously. Had been losing flesh since. Showed dysentery with anorexia. Tuberculin test was negative. Destroyed by a blow on the cranium.

Autopsy showed a considerable number of adhesions between the rumen, diaphragm and spleen, and numerous reddened, fibrous tufts on the omentum and on the peritoneum generally.

The anterior mesenteric and the pulmonary arteries showed calcified areas in the form of irregular plaques similar to case 1. The calcification was in the media just beneath the intima. In the aorta the intima was extensively thickened and irregular with calcification underneath. This began at a point approximating the free edges of the semilunar valves and extended over an area 9 cm. long, covering the entire inner surface of the vessel. Beyond this area there were only individual roughened spots in the intima (fig. 1).

In the heart, the endocardium of the right auricle was roughened, with areas of subendocardial calcification extending over and almost to the edge of the auricular surface of the tricuspid valves. Aside from this, the heart was normal. There was no arteriosclerosis in the coronary vessels.

The mesenteric lymph-nodes were swollen and juicy. Two of the bronchial, five of the sternal and the sublumbar lymph-nodes were hemorrhagic. The other lymph-nodes in the body were normal.

The liver showed some productive hepatitis with areas of necrosis, apparently due to *Actinomyces necrophorus*.

The abomasum and the small intestine showed a chronic catarrhal inflammation, being most marked in the ileum. Scrapings from the mucosa showed acid-fast bacteria, apparently Johne's disease. The other organs appeared normal.

Case 5

A Guernsey cow (1344) four years and six months old, that died with what was suspected clinically to be a traumatic gastritis. She was tuberculin-tested at regular intervals with negative results.

Autopsy showed generalized tuberculosis, primarily in the uterus, with ascites.

There was hypertrophy of the heart with dilatation of the left ventricle. Beginning at the semilunar valves, the aorta contained calcified plaques extending as far as the iliac arteries, apparently not involving any of the branches. In the pulmonary arteries there were areas of calcification at the edges of branching vessels. The left auricle showed irregularly raised, calcified areas. At the place where there was most calcification, the lumen of the aorta was diffusely widened (fig. 5).

Case 6

A sixteen-year-old Holstein cow (1792), Glista Ernestine. She was suffering from septic endometritis and destroyed with chloroform.

Autopsy showed some ascites and hydrothorax. There was an old adhesion between the liver and reticulum for an area 2 cm. in diameter. In the center of this was an abscess, 5 mm. in diameter, extending into the liver for a distance of 2 cm. The liver around this adhesion showed areas of coagulation necrosis and of fatty degeneration. There was also adhesion between the reticulum and diaphragm. Other old lesions were adhesive pleuritis, mostly on the right side, and some degeneration of the articular cartilage on the femoral heads.

The uterus was not completely involuted, the left cornu being larger than the right. The serous surface was thickened by connective tissue (chronic productive parametritis). The contents of the horns was a cloudy, reddish liquid, with the cotyledons necrotic and hemorrhagic.

The heart was enormously enlarged, weighing, when empty, 7½ pounds. There was arterial calcification in the form of plaques involving the entire abdominal aorta, extending into the iliac arteries as far as the finer subdivisions. The lumina of the vessels affected were markedly enlarged (fig. 7).

Case 7

A twenty-one-year-old grade cow (1803) used in surgical practicum and destroyed by chloroform and bleeding from the carotids.

Autopsy showed thickening and roughening of the articular cartilage of the right femoral head. The aorta showed some wrinkling near the base of the heart, with beginning calcified plaques near the coeliac axis. The coeliac arteries are dilated and wrinkled. At the renal arteries and extending to the bifurcation of the iliacs, the aorta shows large calcified yellow plaques, some as large as a centimeter in diameter. The arteries branching off at these points were dilated and showed corrugations perpendicular to the long axis of the arteries.

Case 8

A four-year-old male spaniel (1715) destroyed with strychnin because of hypersecretion of the anal glands. Autopsy showed the heart dilated, and the myocardium flabby and somewhat paler than normal. The dilatation was

mostly in the left ventricle, with the wall markedly thinned. In the aorta, directly above the semilunar valves, there were three calcified plaques. The rest of the aorta and the pulmonary arteries appeared normal. All of the other organs were normal.

Histological Examinations

Histoligically there appeared, in case 1, a proliferation of connective tissue in the intima, with hyaline degeneration and deposition of lime salts, extending in places deeply into the media, with fatty degeneration surrounding the calcified plaques. There was a disintegration of the elastic fibers in and around these areas.

In places the intima showed proliferation, small-round-cell infiltration, with vacuolation. Staining gross pieces of tissue with Herxheimer's fat stain showed the plaques surrounded by a scarlet zone, indicating that these vacuoles represent a lipoid substance. Some of these plaques were in the media, the intima in these areas not being affected (figs. 14 to 19). There were scattered areas of hematogenous pigment in the intima, representing disintegrated red cells caught in the proliferating tissue.

Case 5 (cow 1344) showed the subendocardial tissue to be thickened uniformly throughout the auricle by fibrous tissue containing irregular, calcified spots. The myocardium in that zone was practically all disintegrated, there being a line of muscle fibers just under the endocardium that was still intact, with the cross striations not very evident, however. The arteries showed changes similar to those of case 1 (figs. 9 and 10).

Case 4 (cow 110) showed thickening of the intima by proliferated fibrous tissue with calcification mostly in the media directly beneath the inner elastic membrane of the intima (figs. 2, 3 and 4).

Case 6 (cow 1792) showed a stretching or loss of elasticity of the internal elastic membrane, with a disappearance or disintegration of the elastic fibers of the media, leaving an area of hyaline degeneration in the media next to the intima, which became calcified (fig. 11). In this case also there was fatty degeneration around the calcified plaques.

In case 8 (dog 1715) the calcified nodules were in the media next to the adventitia, in places extending as far as the intima. Around these nodules there was hyaline degeneration. The process in this case seemed to have originated around the vasa vasorum near the adventitia (figs. 20 and 21).

Discussion

In the human subject, the etiology generally given is hard work producing increased tension on the vessel-wall, intoxication by chemical substances such as alcoholism and infections, particularly lues. Somewhat similar causes may be ascribed to these cases. In case 1 there was evidence of absorption of toxic products from an infectious focus, namely, fistulous withers. The hemorrhages in the endocardium also indicate a toxemia or bacteriemia. In case 2, also, the nephrolithiasis with cirrhosis of the liver indicates possibly some kind of a toxemia. The parasites, *Strongylus vulgaris*, might also have contributed as a cause. Both of these cases had coronary disease which is a common cause of death in human arteriosclerosis.

In case 3, as well as in case 2, there was senility in addition to evidence of intoxication and myocardial degeneration.

In cases 4 and 5, there was probably long-continued toxemia, in case 4 from Johne's disease and in case 5 from chronic tuberculosis. In cases 6 and 7, there was, besides evidence of mild infection, a history of long-continued excessive productivity.

Case 6 is that of Glista Ernestine, the world-record Holstein cow, having produced during her sixteen years of life, 202,005.6 lbs. of milk, 7342.25 lbs. of fat in 12 lactations covering 14 years. She had 13 live, healthy calves with no abortions. A record like this certainly represents an unusual strain upon her vascular system. In addition, she had a long-standing abscess resulting from traumatic gastritis. This possibly had a toxic effect upon the vessel-wall.

Case 7 was a family pet for 21 years, also a heavy producer, though a grade cow. Twenty-one years of wear must have had some influence in weakening the aortic wall. Like Glista, she had evidence of rheumatoid arthritis and adhesions between the rumen, reticulum and the diaphragm.

There was a remarkable lack of thrombosis in any of these animals. This leads to a belief that the endothelial lining of the intima was not primarily affected. It seems that the elastic fibres were first affected by a thickening and loss of elasticity, possibly a hyaline degeneration. Later there appeared a deposit of lipoid substance, with formation of fatty acids and calcification.

Case 2, in addition to the advanced age, also shows evidence of chronic toxemia, as evidenced by cirrhosis of the liver, nephrolithiasis and chronic urocystitis. The strongylosis also was a source of intoxication.

Case 3 shows wear and tear over a period of twenty-two years, with the arteries most used, the iliacs, affected by calcification.

In case 8, the condition is different than in the other animals. Here the calcification and degeneration is in the media, next to the adventitia, rather than near the intima. Pappenheimer recently described aortic changes in cases of rheumatism in man. He showed a disappearance of the elastic fibers principally around the vasa vasorum. In this case also there was disappearance of the elastic fibers around the vasa vasorum of the media, near the adventitia, with the calcification in nodular form in degenerated areas near the adventitia, in one spot extending through the entire media. In syphilitic aortitis there is also an extension of the lesion from the adventitia. In this case, the cause may be infection, possibly what would be called rheumatoid aortitis. The arteriosclerosis and thrombo-arteritis so common in Equidae, resulting from infestation of *Strongylus vulgaris* larvae, have purposely been omitted from this discussion, since they come in an entirely different category.

Summary

1. Eight cases of varying degrees of arteriosclerosis are described.

2. The etiology may to some extent be comparable to that in human arteriosclerosis.

3. The lesions are in many respects similar to those occurring in man.

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EXPLANATION ON FIGURES

FIG. 1. Vessels (cow 110), about one-half natural size. A, aortic semilunar valves (normal); B, raised, irregular calcified areas on intima of aorta; C, similar raised areas on pulmonary artery; D, roughened calcified endocardium (auricle).

FIG. 2. Aorta (cow 110) x 20, showing calcification of intima and of media next to intima.

FIG. 3. Medium-sized artery (cow 110) x 20, showing thick intima and adventitia with calcification of media. (Note. In all the microscopic figures "I" is intima; "M" is media; "A" is adventitia.)

FIG. 4. Medium-sized artery (cow 110) x 20, showing calcification and hyaline degeneration of media.

FIG. 5. Aorta (cow 1344) about one-half natural size. A (near end of abdominal aorta), showing scattered concave plaques in areas; B, thoracic aorta, showing raised calcified spots; C, anterior part of abdominal aorta, practically covered with various sized concave plaques.

FIG. 6. Iliac artery (horse D30), showing small concave plaques. (Reduced.)

FIG. 7. Abdominal aorta (cow 1792—Glista Ernestine). (Reduced.)

FIG. 8. Aorta (cow 1803). (Reduced.) A, widened iliac arteries; B, widened coeliac axis. (Note the concave plaques scattered through these arteries.)

FIG. 9. Aorta (cow 1344) x 20, showing calcification in media just under the intima.

FIG. 10. Intima of auricle (cow 1344), showing subendocardial calcification and degeneration. A, practically normal endocardium; B, subendocardial degenerated areas. (The black spots in the wide band under endocardium indicate calcification.)

FIG. 11. Iliac artery (cow 1792) x 20, showing disintegration of elastic fibers. (The right half is normal. The light area in the media and intima on left represents degeneration.)

FIG. 12. Pulmonary artery (horse 74), about one-half natural size. (The darker, irregular, somewhat rounded areas represent calcified plaques.)

FIG. 13. Aorta and coronary artery (horse 74), about one-half natural size. A, semilunar valves; B, opened coronary artery, showing marked calcification; C, aorta showing irregular raised, calcified masses; D, section of aortic wall, showing the calcified areas extending into the media.

FIG. 14. Coronary artery (horse 74) x 20, showing calcification and proliferation of intima.

FIG. 15. Aorta (horse 74) x 20, showing calcification and proliferation of intima.

FIG. 16. Aorta (horse 74) x 20, showing calcification and vacuolation of media. (The dark, oblong area in the center is a calcified plaque surrounded by vacuoles, which proved to be lipoid material.)

FIG. 17. Aorta (horse 74) x 40, showing vacuolation and proliferation of intima with degeneration of media. A, fat vacuoles in folded and proliferated intima; B, vacuoles in media; C, hyaline degeneration of elastic fibers.

FIG. 18. Taken from left upper corner of fig. 17 (at C) x 100, showing cellular infiltration of intima and degeneration. A, infiltration of small round cells; B, hyaline degeneration of media.

FIG. 19. Another part of aorta (horse 74), showing extent of degeneration and proliferative changes.

FIG. 20. Aorta (dog 1715) x 20, showing calcified nodules in the media next to adventitia.

FIG. 21. Aorta (dog 1715) x 40, showing degeneration around vasa vasorum near adventitia. A, the larger of the group of vasa vasorum, surrounded by a homogeneous degenerated area.

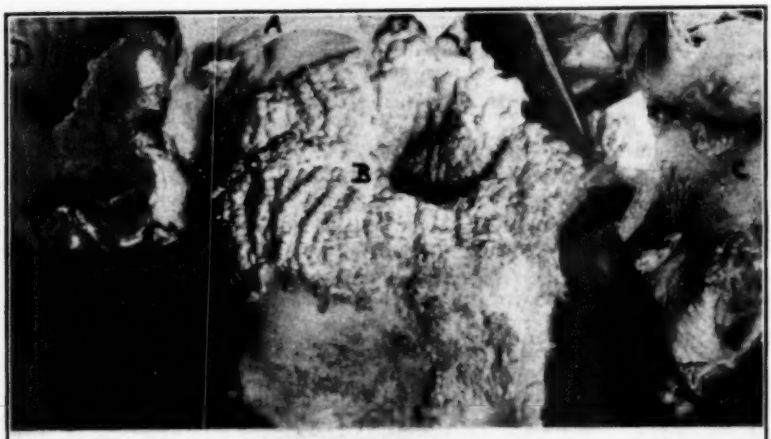

Fig. 1.

Fig. 5

Fig. 2

Fig. 3.

Fig. 4

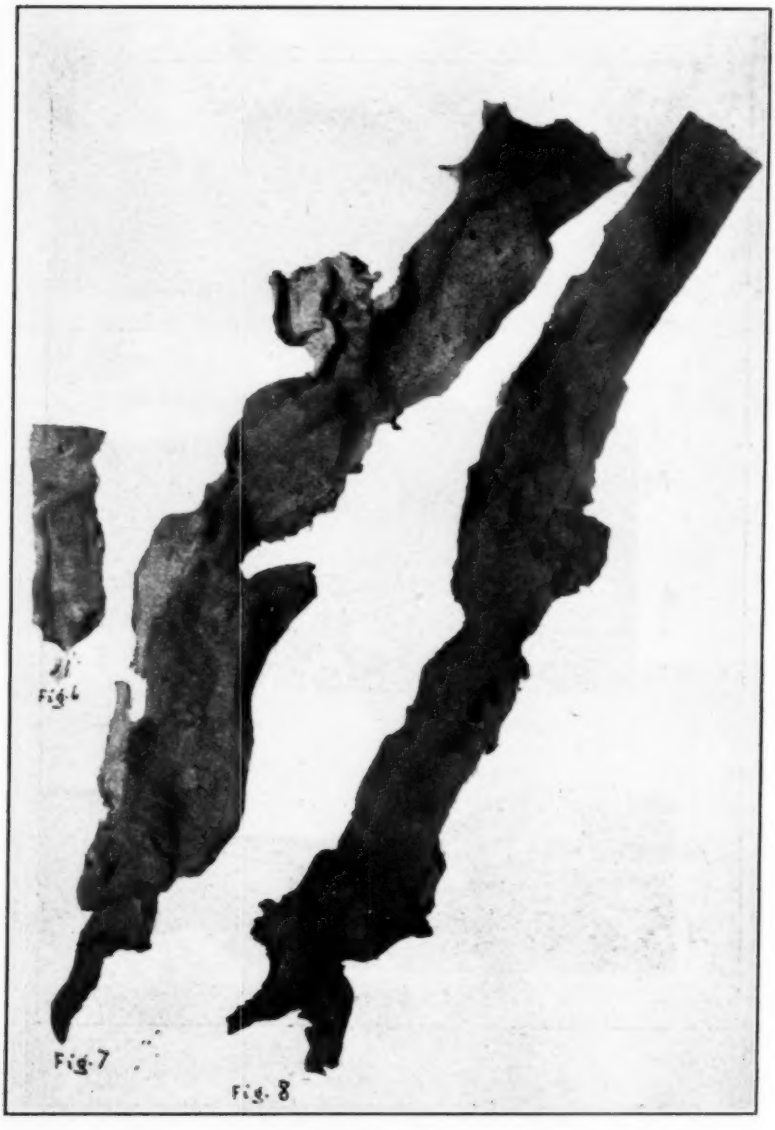
Fig. 6
Fig. 7
Fig. 8

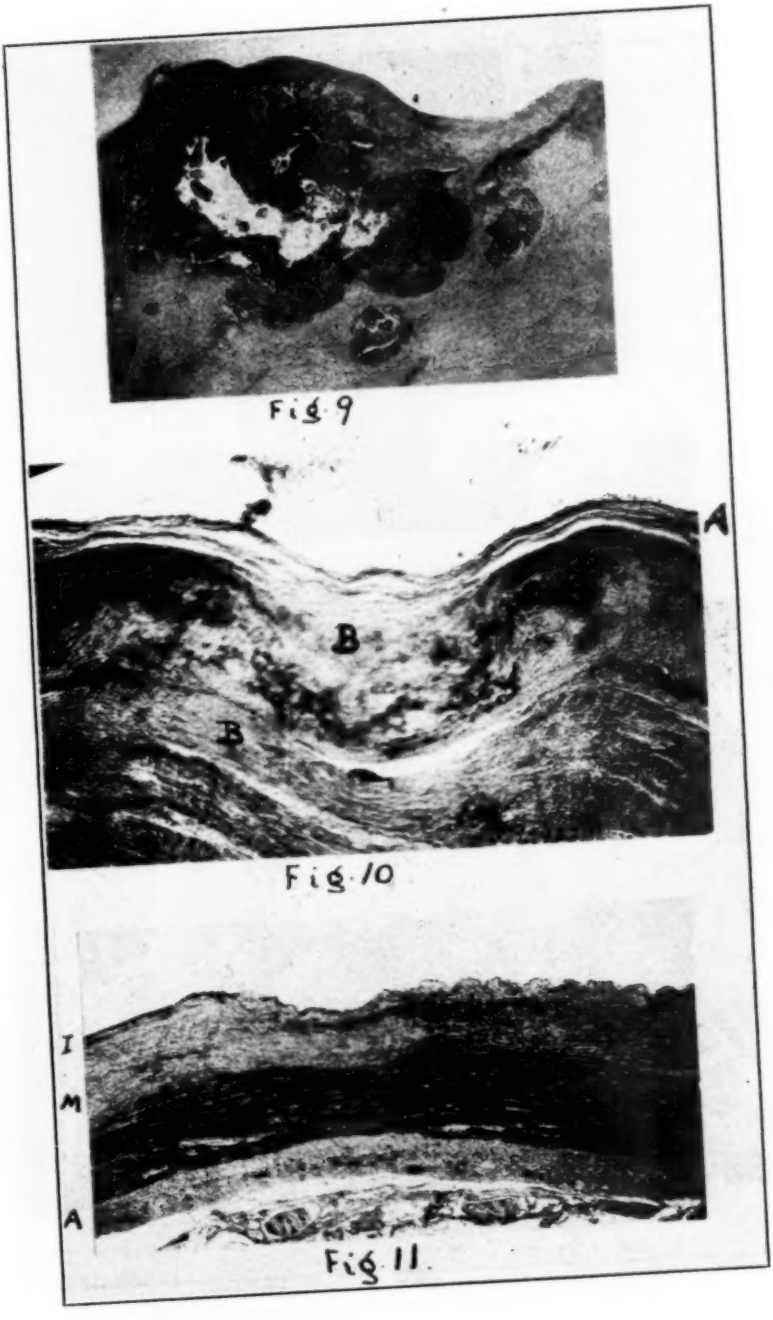

Fig. 9

Fig. 10

Fig. 11.

Fig. 12

Fig. 13

Fig. 14

Fig. 15

Fig. 16

Fig. 17.

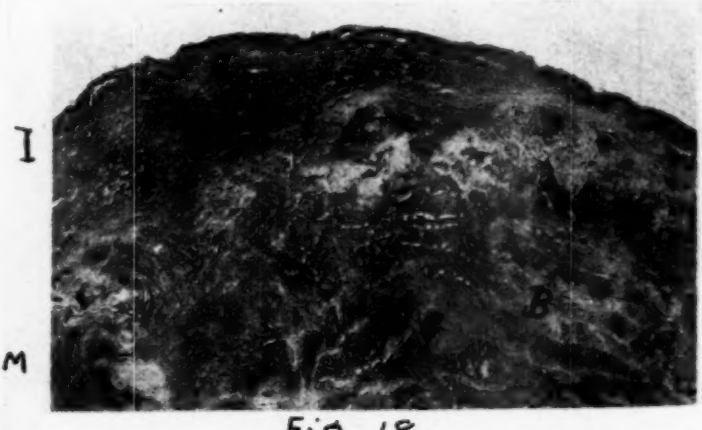

Fig. 18.

Fig. 19.

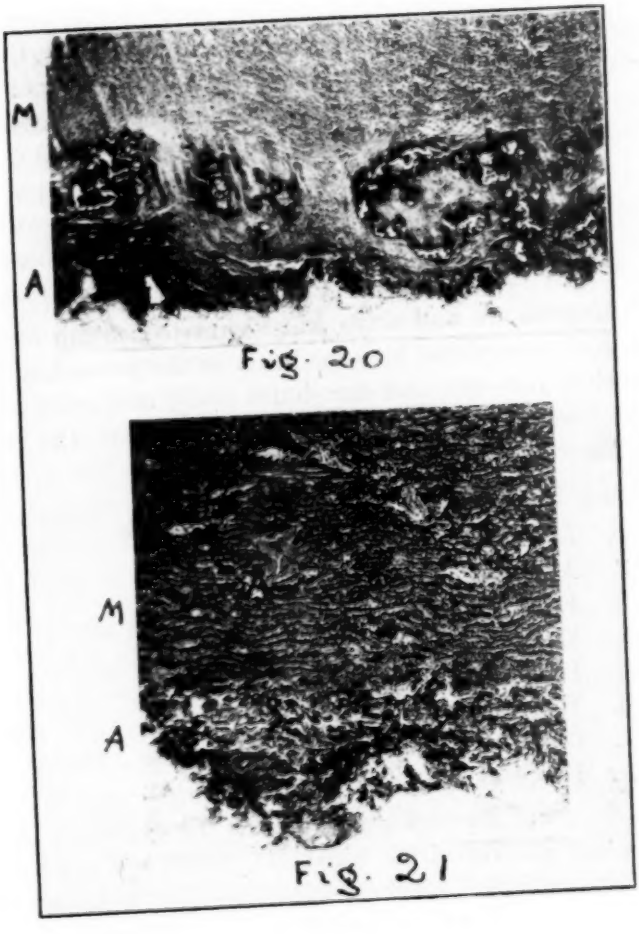

Fig. 20

Fig. 21

HOSPITAL ARRANGEMENT AND MANAGEMENT*

By Dr. H. Schreck, *Portland, Oregon*

When we are confronted with the necessity of caring for patients, either canine or feline, within our own office limits, we soon encounter a number of problems peculiar to this kind of an undertaking. We soon discover that instead of treating a patient we also come face to face with another vital factor, and that is the owner of the patient. It is probably hard, at times, to determine which is the more important part of our transaction, the animal or the owner. On going further we discover that sometimes, in spite of our best effort and our best skill, we have failed to impress the client properly, in other words make him a repeater. Again, cases that we barely thought worth while have left an imprint of excellence on our patron and made him a firm and staunch believer.

As we progress we find ways and means to acquire more and more the ability to pierce into the heart of the pet-animal owner and with that also increases our desire really and truly to be of service to him and give him a personal pride in the hospital where he leaves his dog.

With these fundamental facts in view, we may then consider

1. Location of the hospital
2. Access to the hospital
3. External appearance of the hospital
4. Receiving room
5. Examination room
6. Work room
7. Operating room
8. Hospital kennel wards
    a. Non-infectious wards
    b. Infectious ward
    c. Cat ward
    d. Ward for boarders
9. Kitchen
10. Storage room
11. Man's room
12. Garage

*Presented at the sixty-second annual meeting of the American Veterinary Medical Association, Portland, Oregon, July 21-24, 1925.

In these days of motor transportation the location of the hospital is not near so important as the accessibility to it. Of course it should not be located in any part of the city the general public does not frequent. It should be close to a main thoroughfare in the city or to one of the suburbs where ample parking space is always reasonably assured and not more than a few blocks from one of the trunk street-car lines.

The external appearance of the hospital should be orderly before all things, neat and inviting next, and if purposely designed, it should have somewhat of a "sporty" or "country-club" appearance.

We should endeavor to establish some link between the owner's home and our place of business. This link is our reception room. Here we must impress upon the owner the fact that we think as much of his pet as he does. We must make him very willing to turn the patient over into our care. The good impression that the exterior of our place should leave should, if possible, be enhanced and nothing unpleasant of any nature should be permitted to intervene between our patrons' entry into our hospital and his departure. All of us have different tastes in doing different things, but we must not forget that our reception room is our patron's own room and it is not until we get beyond it that we become our own masters.

Good Impression Important

On entering the examination room, order, system and knowledge of our business should impress our client. An easily cleanable table, for the examination of patients, will be found a prime requisite. It need not be expensive, but it must be clean at all times. Our knowledge of infectious diseases should be sufficient reason for this requirement. In our institution we dispense all the medicine that we prescribe, and we keep all of our drugs in plain view of the public. A proper array of technical fluids often makes them forget the patent medicines on the druggist's shelves. No effort should be made to impress the client with a world of scientific phrases, no circus tricks should be performed, and freak operations also are best left under cover. Common sense should be our guiding principle, for, according to Emerson: "Nothing astonishes men as much as common sense and fair dealing." Tact here is very essential, but at no time should the truth be sacrificed for tact, if it serves the purpose equally well.

Where space is available it is advisable to keep the work room

and operating room separated from the examination room. In a number of places it will be found necessary to combine the operating room, work room and examination room all in one. This can be done and suitably worked out, but sooner or later we come to lots of grief and we find that infectious diseases are contaminating everything that we own, and while segregation is not an absolute panacea for our plight, neverless it alleviates much of the trouble.

The work room should contain a suitable working table on which animals can be properly restrained. All necessary medicaments, material for the preparation of casts, clippers and bathing facilities should be available here. The daily attention to cases can best be given here, without interference with the examination room, the latter always being in readiness to receive patients.

The operating room naturally should be well lighted and have good floor drainage. The equipment may consist of an operating table, a sterilizer, an instrument case, shelving and closet space for bandages and restraint material, anesthetics and such other medicinal preparations as will be found necessary.

The hospital kennel ward, if possible, should join the work or examination room. Its division in non-infectious, infectious, cat and boarder wards should be attempted if circumstances will permit. The number of kennels should be commensurate with the amount of business done, with a few surplus kennels to handle an occasional peak load. They should be so constructed that they may be easily disinfected and washed, have sufficient exposure to fresh air and light, afford secure protection to the occupant against other patients and assure the patients positive confinement, forestalling escape.

Types of Kennels

Various types of kennels that will be found suitable come within the above requirements. Fundamentally they may be classed as follows: Permanent (built-in), all-steel, steel-and-glass, steel-and-wood, wood-and-wire, all-wood. All of them have good features. The more good points they have the higher prices we usually find them. However, it should be borne in mind that they need not be expensive as long as they are clean and comfortable.

The kennels should be roomy and of different sizes to accommodate animals of different sizes. One or two extra-large kennels should be available to comply with the owner's wishes to pen

two or more of his animals together, or to accommodate extra-large animals, or to be used as whelping pens. Cat cages can be considerably smaller than the dog kennels, but every effort should be made to have them well lighted and warm in winter.

The infectious ward should have its own individual drug supply and other facilities, so that it can be conducted as an independent hospital. Every other possible precaution should be taken to reduce the chances of carrying infection from here to the other hospital. Hot and cold water should be available in different parts of the building, to facilitate the watering of patients and promote cleanliness in general.

Kennels for boarders, if possible, should be separated from the hospital proper and need not necessarily have a hospital appearance as long as they are clean and roomy. A run or bull-pen should be installed in connection with them.

Other Appointments

The kitchen, while not absolutely essential, will be found very convenient for the preparation of food, the washing and sterilization of drinking utensils and feed-pans, the storage of janitor and grocery supplies, and it can well be connected with a general storage-room, where you can put under cover many of the numerous articles that will inevitably accumulate. The large tin can, where we may submerge our sorrows and bury our mistakes, should not be forgotten, to be taken care of when "nobody looks."

A man's room will be found necessary in some establishments where the veterinarian himself does not live on the grounds. It should be commodious in connection with a bath and toilet facilities, and always kept neat and orderly, in keeping with the rest of the hospital. A garage space for the doctor's car or an ambulance should be conveniently accessible, so that patients or supplies may be loaded or unloaded within the building.

The management should begin with the veterinarian himself. He should strive to present at all times a respectable appearance, be ever on the alert for everything new in his profession, not necessarily ape everything that comes along, but keep himself posted on all daily questions of social and business importance, and be sufficiently acquainted with social customs to be able to meet all comers, high and low, in a responsive manner.

Patients should be received in a kindly but firm manner, should be subjected to a searching and conscientious examination, properly prescribed for and promptly returned to the owner or

turned into the hospital after proper identification and the execution of some record. A numerical system of checking collars, chains, blankets, boxes, etc., will be found a great trouble-saver and facilitate the return of a patient should he contrive to escape. A good system of record-keeping will aid matters in receiving and discharging patients. Keep posted every one who comes in touch with the patient as to the exact condition when received and the standing of the account. A rough outline of treatment is also indicated, together with the medicine sent home with the patient, the number on the label corresponding with the record number. Arrangements for settlements of accounts can be made in the examination room or adjoining office. It is well always to insist on a substantial advance payment to insure the owner's return.

Kennels should be cleaned preferably early in the morning, before the daily flow of new business arrives. In our particular instance we find straw a very convenient bedding, cheap and appealing to our clients. A general survey of all patients should be made, as soon as practicable, to be on the alert for incoming inquiries for the condition of certain patients. Visitors should always be gladly shown about the place, but in general it is better practice to discourage too much visiting of patients. It is well to make it impossible for the general public to have access to the kennel room without being taken there by an attendant or the veterinarian himself.

The duties of the helper should be as much as possible confined to the manual tasks about the place and it is not until we find need for several helpers that we should try to develop the most adept into trained nurses.

In conclusion, we find that our ability to handle our patient properly comes first; following this, to administer to his wants successfully; earn the admiration and appreciation of his owner next, our reward being the direct result of our ability to be of real service.

DALRYMPLE LIBRARY

Mrs. W. H. Dalrymple has given to the Louisiana State University the entire scientific library of the late Dr. Dalrymple, consisting of about two hundred volumes on the subjects of feeds and feeding, pathology, bacteriology and sanitation. The collection will be known as the Dalrymple Library, to be used for reference purposes by the students of the University, particularly those pursuing agriculture.

THE SILVER FOX*

By H. M. BECKMAN, *Spokane, Wash.*

The silver fox industry has attained considerable proportions in the United States and Canada during the past ten years. There are now 20,000 foxes registered in the herd book of the American National Fox Breeders' Association and possibly half as many more not registered for one reason or another. The industry has attracted men from all walks of life and most of them have made handsome profits from their investment.

As a fur-bearing animal raised in captivity, the silver fox has no rival, and both live foxes and pelts are in demand. Like other live stock projects, the element of disease is the chief limiting factor. The silver fox is a peculiar animal. Couple this with a marked change in environment, such as close captivity and restricted diet, and we can easily see that he is going to present, sooner or later, a number of conditions which do not exist in the wild state. The industry is of too recent development to be backed by extensive study and research, therefore we have to rely chiefly upon comparative medicine and good judgment in the safe handling of its problems. Let it be understood, at this time, that the writer does not pose as a fox specialist and this paper will contain no elaborate technicalities.

In the first place, the physiology of the fox is very similar to that of the dog. Females ordinarily breed before they are a year old and once a year thereafter. The estrual cycle lasts from five to seven days. The gestation period is 51 or 52 days, with many exceptions noted. The period of lactation ordinarily lasts about five or six weeks. The mortality rate is usually high in young pups. Cannibalism in the female accounts for quite a number; parasites and nutritional diseases account for the rest. The roundworm is the principal parasite of the young pup. I have posted a number of very young pups and found these worms. Also, in the case of an aborted litter, I found these parasites in the lung cavity. It seems that in most cases infestation take place before birth.

Oil of chenopodium seems to give best results in the treatment for these parasites. It is generally given when the pups are from three to four weeks old, and repeated at ten-day intervals until

*Presented at the sixty-second annual meeting of the American Veterinary Medical Association, Portland, Oregon, July 21-24, 1925.

worms are no longer found. Usually two treatments are sufficient. The kennels should be well ventilated when this drug is given, or the pups should be kept in the open air.

Hookworms do not infest the very young, infestation usually occurring when about two months old and at any time thereafter. This parasite is geographical in its distribution. We do not have a safe and yet efficient remedy for this parasite. Carbon tetrachlorid has been a popular treatment, but owing to its dangerous properties it must be used with extreme caution. Inhalation produces immediate death. Absorpton produces severe disturbances in the liver and kidneys, which may produce death in from one to six months. Epsom salts with this drug tends to lessen its absorption, but losses are to be expected, no matter how administered.

Rickets and a peculiar nutritional eczema are the most frequent of the nutritional diseases. The symptomatology of the former is well known, being an exact counterpart of the disease as is found in dogs. While the mechanism of its production is unknown, analysis of the mineral content of the ration usually reveals a lack of calcium and phosphorus. Addition of foodstuffs containing these elements and cod-liver oil effects a complete cure in a very short time. The eczema is characterized by a loss of fur, dandruff and wrinkly skin. Pups do not grow as they should and often are very thin. Orange or lemon juice ordinarily will correct this condition.

Convulsions Quite Common

A severe, acute indigestion, accompanied with convulsions, is quite often noticed in pups, both when nursing the mother and after weaning. The condition in itself is not often fatal, but as the other foxes in the pen usually attack and devour the sick, the survivors are few and far between. Eating of sticks and rocks, wire-licking and various other bad habits have been brought to our attention. The cause of these conditions is beyond us. They may be due to a lack of something, or there may be something on the rocks or wire that they like, or they may just be habits.

Foxes ordinarily get their wounds from fighting with one another, or from running into some object, or from falls from the wire. Fighting wounds are dangerous. The canine teeth of the adult fox are sharp and long and their jaws are powerful. Also, they have the faculty of selecting a vulnerable spot, either

the neck, chest or back. Wound treatment consists in obliterating any pockets and establishing free drainage. Dry boric acid powder is about the most satisfactory antiseptic. Fox tissue reacts unfavorably to most of the strong antiseptics, especially to the coal-tar products, and caution must be used when the latter are applied to the broken skin. Cutting the canine teeth just above the level of the gums prevents most of these injuries.

Fractures are handled in the same manner as those of the dog. If bandages or casts are used, quinin or some other equally tasty drug must be applied at frequent intervals to keep the patient from chewing them. Amputations are very often necessary in case of compound fractures, and these are for the most part very successful.

Ear mites affect both old and young foxes. They are a very common parasite and breeders as a rule treat their herds once or twice a year for them. These sometimes produce a disturbance of the inner ear, which causes alarming and sometimes fatal symptoms. Many remedies are used to destroy this parasite. However, one should never flush the ear with any solution. Swabs are just as effective and less dangerous. Coal oil is about the most satisfactory remedy found to date. Fleas also infest foxes and they are handled by the usual methods. Foxes are also subject to the mange parasites, but this is very infrequent, due to habitual confinement. Mange presents the same difficulty in handling as it does in the other species.

Distemper Frequently Occurs

Distemper is the most common infectious disease of the fox. It is similar to that of the dog in many respects. However, it has not been conclusively proven that the two are intertransmissible. Both aged and young foxes are attacked and they present the same train of symptoms as we find in the dog. Many, however, will die without showing symptoms. To date we know very little about the disease, and less of its treatment. Doctor R. G. Green, of the University of Minnesota, has given considerable time to the study of the disease and claims to have found the causative organism. He is now conducting immunological and therapeutic experiments with a vaccine which he has developed from the organism. The results have not been published. Distemper is extremely fatal, as nearly all die after symptoms have developed. The method of spread of the disease has not been fully determined; neither has the period of incuba-

tion. Prevention of the disease by isolation and sanitation seems to be our best recourse at the present time.

There is another infectious disease affecting only young pups and producing a fatal pneumonia in every instance. I isolated a bacillus from the lung cavity, which produced this trouble, but I could not identify it. It was not highly infectious and did not seem to spread by contact. The pups did not show any symptoms of the disease whatsoever and died very suddenly. Postmortem revealed intense inflammation of the lungs, petechiae of the heart and kidney and some degenerative changes in the liver. Removal of pups from the original pens and putting them on wood floors seemed to stop the trouble.

We, no doubt, have other diseases of the fox but, if so, they have not been recognized and described as such. We have been handicapped in a good many ways in recognizing and trying to handle diseases in the fox. In the first place breeders are naturally a secretive bunch, taken as a whole, and until they are faced with a clean-up disease, losses are not ordinarily divulged. The fox business also has considerable mysticism entering into it and correct information is sometimes impossible to get on this account. The fox himself covers the rest. He usually dies without showing very marked symptoms. After death he is usually devoured, or partially so, by pen-mates, so that a postmortem is impossible. Postmortems even when possible are apt to be misleading and quite a number of microscopic lesions are absent.

Preventive medicine, judiciously applied, is best for the general welfare of the industry.

NEWS ITEMS

A farmer of Monroe County, Mich., recently tried to vitiate a tuberculin test of his cattle by applying kerosene oil to the skin of the animals. Assistant State Veterinarian Dr. Stanley G. Colby made the complaint, to which a plea of guilty was made, and the farmer was fined $13.

Dr. C. Gustav Danelius, Assistant Professor of Veterinary Surgery at the Royal Veterinary College, Stockholm, Sweden, is taking a special graduate course in foot diseases at theUniversity of Pennsylvania School of Veterinary Medicine.

NO-LESION TUBERCULIN REACTIONS*

By E. C. SCHROEDER,

Superintendent, Experiment Station of the U. S. Bureau of Animal Industry, Bethesda, Md.

My paper today, practically, is a duplicate of a paper on no-lesion tuberculin reactions I presented at Providence, R. I., last June, at the sixth annual Eastern States Tuberculosis Eradication Conference; hence, I beg the kind indulgence of those who may have heard it before and are acquainted with its contents.

No-lesion tuberculin reactions, I have observed, are too commonly discussed in misleading terms, which foster the idea, particularly among laymen, that the tuberculin test for tuberculosis is seriously defective and unreliable.

If you will think a moment, you will recall the frequency with which large, often surprisingly large, percentages, which signify only a very small number of animals, are used in speaking about no-lesion reactions. Such percentages are obtained by using two factors, the number of animals which react with tuberculin and the number among the reacting animals which fail to show lesions of tuberculosis on postmortem examination; they fail to take the total number of animals tested into account and, hence, are worthless as a measure of the reliability or accuracy of the tuberculin test.

Let me illustrate by using actual figures, the first of which were presented last October by three investigators, Hastings, Beach and Weber, in an article on "No-lesion and Skin-lesion Reacting Cattle," in the JOURNAL of the American Veterinary Medical Association.

The named article, though it makes some statements with which I am not fully in accord, is generally good and merits that it should be read by those who are engaged in the fight against bovine tuberculosis, and my use of figures it contains should not be interpreted as adverse criticism.

In one county in Wisconsin 30,010 cattle were tested with tuberculin, among which 337, or 1.12 per cent, reacted. Among the reacting cattle 22.55 per cent failed to show lesions of tuberculosis on postmortem examination. In another county of the

*Presented at the Lake States Tuberculosis Eradication Conference, Indianapolis, Ind., October 12-13, 1925.

same state 21,669 cattle were tested with tuberculin, among which 183, or 0.844 per cent, reacted. Among the reacting cattle 25.13 per cent failed to show lesions of tuberculosis on postmortem examination.

It sounds appalling when we say, in one case we have over 22 and in the other over 25 per cent of no-lesion reactions. But, when we take into account that the total number of cattle tested was 51,679, and the total number of no-lesion reacting cattle only 123, an average of one per every 419, or 0.237 per cent of the total number of cattle tested, it does not seem so bad, and certainly does not prove that those who have claimed a high accuracy and reliability for the tuberculin test have gone far astray, or have been guilty of gross exaggeration.

Now let us examine a second and much larger group of figures. During the first half of the present year the Federal Tuberculosis Eradication Division reports that 3,842,902 cattle were tested with tuberculin, among which 109,599, or 2.852 per cent, reacted. The records of the Division show that during the four-year period from December 1, 1920, to December 1, 1924, no-lesion reacting cattle amounted to 8.5 per cent of all reacting cattle.

Consequently, if no-lesion reactions were no commoner during the first half of this year than during the four years ending December 1, 1924, 8.5 per cent of 2.852 per cent should give us the proportion of no-lesion reacting cattle among nearly four million cattle currently tested in a routine manner by a large number of competent men during a recent period of six months, and this is 0.242 per cent, or an average of one animal among a little more than every 412 tested.

No-Lesion Reactions Becoming Fewer

To forestall a criticism that no-lesion reactions may have been commoner during the last six months than during the preceding four years, I wish to add that the most recent data now available indicate a decline rather than an increase in such reactions. For example, among 19,000 reacting cattle slaughtered and examined postmortem under the supervision of the Tuberculosis Eradication Division during last August, only 5.6 per cent, in the place of 8.5 per cent, proved no-lesion cases. This would mean one no-lesion case among every 714 cattle tested, and would reduce the proportion of no-lesion cases among tested cattle from 0.242 per cent to 0.14 per cent.

The two groups of figures give results that are virtually identical, and both groups support the conclusion that the reliability of the tuberculin test, as it is affected by no-lesion reactions, is better than 99.75 per cent perfect.

The study of the degree of perfection with which a test should be credited emphatically requires that we should take the following factors into account: The number of instances in which the test fails to record the condition it should record; the number of instances in which it records, or seems to record, the condition when it does not exist, and the total number of individuals tested.

How far we may go astray, if we attempt to measure the reliability of the tuberculin test by taking only the number of no-lesion instances among the animals that react into account, immediately becomes evident when we recognize that a single reaction among any number, no matter how large, of wholly tuberculosis-clean cattle would equal an absolute, or total, 100 per cent condemnation.

Careless Statements should be Avoided

No-lesion tuberculin reactions have sufficient importance to require careful study; no one who has given them due consideration seeks to deny this, but their importance should not be absurdly exaggerated, and we should not speak about them in practically meaningless, high percentages, which tend to engender the impression that the bovine tuberculosis eradication campaign may break down, or may have to be abandoned, unless a better method to detect tuberculosis than the tuberculin test is discovered.

The assertion has been made that no-lesion reactions are commoner in herds and areas in which the percentage of cattle affected with tuberculosis is low than in those in which it is high.

I do not know how reliable this assertion is, and have not been able to obtain data that throw much light on it. Of course, it naturally follows, if the percentage of reactions among tested cattle, due to other causes than tuberculosis, is fairly constant, the proportion of no-lesion cases among animals that react, or show phenomena indistinguishable from reactions, will be greatest where the least tuberculosis exists, and will gradually increase as the frequency of tuberculosis declines. But this certainly does not mean a larger percentage of no-lesion reactions among the total number of animals tested in cleaner than in

less clean herds and areas, and, hence, it does not mean that we will be plagued with an actually increased number of no-lesion reactions proportioned to the declining frequency of tuberculosis.

I might say, however, if the results obtained with small, experiment animals are applicable to cattle, we have some reasons to believe that no-lesions reactions may be somewhat commoner in the tuberculosis-cleaner herds and areas than in the more heavily infected. But here we are dealing with true, undeveloped tuberculosis, which someone has aptly named, "microtuberculosis."

When guinea pigs are given injections of human or bovine, virulent or avirulent, living or dead tubercle bacilli, they become sensitive for tuberculin, and the rapidity with which the sensitiveness develops is not affected by the kind of tubercle bacilli injected. On the other hand, the rapidity with which visible lesions of tuberculosis develop, and the length of time that elapses before the guinea pigs die of tuberculosis, varies greatly both with the number and type of the tubercle bacilli injected.

Incubation Period an Important Factor

Applied to cattle this would mean that in herds and areas in which tubercle bacilli are disseminated in small numbers and in which the infecting dose therefore would be small, and in herds and areas in which infection results from tubercle bacilli that have declined in virulence during transit from more or less remotely located sources, the time that would elapse between the moment of infection and the development of tuberculin sensitiveness would be no longer than in herds and areas in which the abundance of tubercle bacilli insured large infecting doses or the proximity of the source insured infection with bacilli of unimpaired virulence. It would further mean that the time that would elapse between the moment of infection and the development of discoverable lesions of tuberculosis would be proportionally lengthened as either the dose or the virulence of the infective tubercle bacilli declined.

It needs no argument to show that a lengthening of the time between the development of tuberculin sensitiveness and the development of macroscopic lesions of tuberculosis would increase the frequency with which periodic tuberculin tests would reveal reacting cattle in which no lesions of tuberculosis would be found on postmortem examination, true cases of tuberculosis, however, in which unmistakable lesions soon would have become evident,

and which in time would have become dangerous disseminators of tubercle bacilli.

I can think of no reasons in this case against the application of the results obtained with small experiment animals to cattle.

Tuberculosis in most instances is a chronic, slowly progressive disease, and the tuberculin test supplies no information about the age or the volume of the lesions or the virulence of the responsible tubercle bacilli. Bearing this in mind we cannot fail to appreciate that it would be surprising if we did not find some animals that react before lesions can be discovered in their bodies. And we must not forget that the Pathological Division of the Federal Bureau of Animal Industry examined tissues from several thousand, so-called, no-lesion reacting cattle and proved, indisputably, that about 25 per cent were infected with tubercle bacilli, or were early, incipient or undeveloped cases of tuberculosis.

As I have pointed out on several occasions, the proof supplied by the Pathological Division in this connection, if proper weight is given to the numerous uncertainties and difficulties in work of this kind and to the consequent chances that the positive evidence may be overlooked, practically justifies the conclusion that the common run of no-lesion, tuberculin-reacting cattle is composed mostly of cattle in the early stages of tuberculosis.

Non-reacting Tuberculous Animal Greater Menace

To me, no-lesion reactions are less disquieting than the absence of reactions in the presence of lesions. The former requires the useless but unavoidable destruction of a very small percentage of tuberculin-tested cattle, while the latter means that dangerous sources of tubercle bacilli may escape detection. The manner in which the tuberculosis eradication campaign is being conducted fortunately reduces the danger from tuberculous cattle, that do not react with tuberculin, to the lowest, practically obtainable minimum.

Before passing to other phases of my subject I wish to return a moment to my statement that the tuberculin test, after deductions have been made for the errors chargeable against it on the basis of no-lesion reactions, has a 99.75 per cent efficiency. The available data prove this statement to be correct, but, as there are other factors than no-lesion reactions that require consideration, I do not believe, and do not proclaim, and do not care to be quoted as asserting, that the tuberculin test is 99.75 per cent

efficient. I do not believe that it or any other test that is applied to, or is dependent upon material obtained from, living organisms, is within one-quarter of one per cent perfect. What I do believe is that the tuberculin test, when it is properly made and interpreted, is equal to any other test we have for tuberculosis or any other disease with which I am acquainted, and that practical experience has proved it to be fully as reliable, and even more so, than its reasonable advocates have claimed it to be, and that its proved reliability justifies the dependence the bovine tuberculosis eradication campaign is basing on it.

The use of the expression, "common run of no-lesion, tuberculin-reacting cattle," introduces the question of no-lesion reactions which cannot be classed as belonging to the "common run."

When reactions occur among cattle in herds or areas wholly free from tuberculosis and in no discoverable way exposed to bovine tubercle bacilli, particularly when 5, 10 or even a larger percentage of a clean herd reacts, we must ask, "What is wrong?"

Causes of Non-Specific Reactions

A partial answer to the question may be obtained by studying some of the conditions, other than bovine tuberculosis, which may cause cattle to react with tuberculin or to show phenomena simulating tuberculin reactions. And this requires that we should give a little attention to tubercle bacilli of other types than the bovine; to acid-fast bacteria which are not true tubercle bacilli; to allergy for other substances than tuberculin, and to impure tuberculin.

Tuberculin produced with either human or bovine types of the tubercle bacillus, as far as we know, is equally satisfactory as a diagnostic agent for cattle tuberculosis. Tuberculin produced by the avian type of the tubercle bacillus has a very low value as an agent for detecting tuberculosis caused by bovine or human tubercle bacilli, and, as would naturally be expected, tuberculin produced by the mammalian types of the tubercle bacillus is an unsatisfactory test agent for avian tuberculosis.

Cattle may be sensitized for the tuberculin currently used to test them by either bovine or human tubercle bacilli, notwithstanding that the latter cause no lesions or only small, inconspicuous, retrogressive lesions in their bodies. They are only slightly or not at all sensitized for human and bovine tuberculin by avian tubercle bacilli.

The human type of the tubercle bacillus is believed by some investigators to be ubiquitous. I neither agree, nor desire to encourage agreement, with this belief, but we will not stray far from the truth if we assume, on the basis of the unquestionably wide distribution of the human tubercle bacillus, that it often occurs in considerable numbers where its presence is unrecognized or denied. Hence, no-lesion tuberculin reactions among cattle, in an environment free from bovine tuberculosis and bovine tubercle bacilli, should lead us to suspect and search for a source of human tubercle bacilli to which the cattle may be exposed. Avian tubercle bacilli, although avian tuberculosis has greatly increased in frequency during recent years, I am inclined to believe, cannot be held responsible for more than a negligible number of no-lesion tuberculin reactions. But, it must be admitted, the significance of avian tubercle bacilli in this connection is in need of further investigation.

Infection from a Human Source

I have one instance in mind in which the obtainable, circumstantial evidence proved about as conclusively as such evidence can prove anything, that fairly numerous, no-lesion reactions, in a herd in which there should have been no reactions, were due to an attendant, affected with open, pulmonary tuberculosis, who, during a fairly long period of time, prepared the feed for the cattle, and continued to do so until he was too weak for the task, or a few months before his death.

It is instructive to know that the response to the questions asked in this instance to secure evidence on the exposure of the cattle to human tubercle bacilli at first was negative. It is a kind of exposure I invariably would give consideration in presumably clean herds and areas, not determinably exposed to bovine infection, in which no-lesion reactions occurred.

The sensitization of cattle through their exposure to human tubercle bacilli is coupled with a number of peculiarities. The same exposure apparently does not sensitize all cattle. Factors like individual susceptibility, the condition of the animal at the time of exposure, virulence of the bacilli, etc., seem to make considerable difference.

One peculiarity about cattle sensitized by human tubercle bacilli is that they react once with the subcutaneous test and not again, though it may be possible to resensitize them through

continued or renewed exposure, but this is a matter regarding which we require additional information.

We may safely conclude that the exposure of cattle to the human type of the tubercle bacillus, that is, to human tuberculous individuals who are disseminating tubercle bacilli, accounts for a considerable number of no-lesion, tuberculin-reacting cattle.

Acid-fast bacteria other than pure tubercle bacilli, of which several dozen have been recorded, in some instances may be responsible for no-lesion reactions; but, when I think that we have, in addition to human and bovine tuberculosis, avian tuberculosis and Johne's disease, which are caused by truly pathogenic acid-fast bacteria, and that avian tuberculin and johnin are practically worthless as test agents for human and bovine tuberculosis, and that human and bovine tuberculins are practically worthless as test agents for avian tuberculosis and Johne's disease, it seems a little difficult to believe that acid-fast saprophytes, with their only occasional and low pathogenic potency, can be factors of real importance.

Other Acid-Fast Organisms not Important

I know, to be sure, that certain conditions which somewhat resemble tuberculosis have been charged to the activity of other acid-fast germs than tubercle bacilli, and that, in a very small number of instances, the claim has been made that the affected animals reacted with tuberculin. But, if the numerous and widely-spread, acid-fast saprophytes had the quality of sensitizing to tuberculin, I am more than inclined to believe they would have made it necessary long ago to rank tuberculin very low as an agent for diagnosing tuberculosis.

Impure tuberculin and allergy for other substances than tuberculin should be considered together, particularly when we deal with other impurities that have been found in tuberculin than a very small number of dead tubercle bacilli.

Tuberculin is an exceedingly complex substance, as anyone may comprehend who knows, first, that its active agent is a very small part of it and has never been isolated; and, second, that it is virtually impossible to make the glycerinized bouillon, in which it is produced by the multiplication of the tubercle bacillus, constantly of identically the same chemical composition. Every bacteriologist probably knows how much the color of different lots of similarly made meat bouillon varies, and how much different lots of presumably identical culture media, of

which meat bouillon forms a part, may vary in their quality as a soil for bacteria.

This has made it necessary, in the intricate and delicate investigations now in progress, the object of which is the isolation of the active agent or agents of tuberculin, and the discovery of additional knowledge about other substances produced by the tubercle bacillus and about the composition of the bacillus itself, to use special culture media for growing the germ, from which, as far as it is possible, everything of unknown or varying composition, like meat, meat extracts etc., is excluded.

I regret that I cannot give further attention to these investigations, from which much may be expected in the future if the industry, intelligence and loyal scientific devotion with which they are being conducted are rewarded with merited success. They are a part of the work the Biochemic Division of the Bureau of Animal Industry is doing, and the past achievements of this Division and its Chief should inspire confidence and hope.

When we consider how much has remained unknown about tuberculin it is really surprising that the numerous attempts that have been made to discredit its reliability have not been more successful.

Tests for Purity and Potency

The Bureau of Animal Industry periodically tests the purity and potency of its own tuberculin and of that manufactured under Government license. This does not mean that it tests the purity and potency of all the tuberculin made and used in the United States. It has no control over tuberculin made for use exclusively within the state of its production, and tests samples of such tuberculin only when it is requested to do so, because some question has arisen about their purity or potency. A sample of this kind was received and tested several months ago, with the following results:

General Appearance: Slightly turbid. It should have been perfectly clear. Addition of 5 per cent phenol solution—turbidity greatly increased. The clearness should not have been affected. Centrifuged—abundant sediment obtained. It should have shown, at most, a barely perceptible sediment or none at all.

Microscopic examination: Sediment—composed of acid-fast bacteria, probably dead tubercle bacilli, and a large number of micrococci. A much smaller number of dead tubercle bacilli,

though undesirable, might have been overlooked as having little practical importance; micrococci or other bacteria must be looked upon as a superlatively objectionable contamination when they occur in tuberculin.

Potency: As measured by its injection into tuberculous guinea pigs, apparently satisfactory.

The subcutaneous use of this tuberculin, because of the large number of dead tubercle bacilli it contained, would tend to cause the development of tuberculin sensitiveness; consequently, there is a chance that cattle injected with it would show no-lesion reactions with subsequent tuberculin tests. As the number of dead tubercle bacilli required to cause tuberculin sensitiveness varies with individual animals, the subscutaneous injection of the contaminated tuberculin into 50 or 100 cattle would not necessarily sensitize the whole number. The sensitization, more likely, would be limited to a few animals, probably the more easily sensitized and those which received the dregs from bottles or containers.

Further, the use of the contaminated tuberculin might cause reactions similar to tuberculin reactions because of the other foreign matter it contained. It is well known that sensitiveness of the body and skin may be induced by a variety of different substances, and that sensitiveness for various substances often exists when we have no reason to expect it.

If this was not true we would not have tests which closely resemble the tuberculin test, in the manner in which they are made and the reactions obtained, such as abortin for infectious abortion, mallein for glanders, johnin for Johne's disease, skin tests for typhoid fever, syphilis, diphtheria, etc., and tests relative to sensitiveness for quite a large number of plant and animal products.

Many Varieties of Sensitiveness

Consider for a moment how often sensitiveness exists for different substances like pollens, hair and skin emanations from different species of animals, food stuffs, feathers, dust of different kinds, etc., and how its presence can be shown through reactions caused by the intradermal injection of minute, often infinitesimal, amounts of the material concerned, and consider that such sensitiveness may be restricted to only a few among many individuals who apparently have been exposed equally to the conditions through which it originated, and no room will be left for surprise

when tuberculin, contaminated with micrococci or other bacteria, is used, that we should have some reactions which cannot be distinguished from true tuberculin reactions, in animals which show no lesions of tuberculosis on postmortem examination.

The sample of tuberculin, here used as an example to show how tuberculin may be contaminated with objectionable foreign substances, is not the only specimen, not subject to the supervision of the Federal Bureau of Animal Industry, which has been found to be contaminated or otherwise unsatisfactory, and commercial tuberculin, made and sold under Government license and periodically tested, is not always of unimpeachable purity and potency.

A moderately clear conception of the large variety of substances for which animals may be allergic or hypersensitive, and of the minute amounts of such substances that may be sufficient to induce reactions quite similar to tuberculin reactions, gives us good reasons to wonder that impure tuberculin has not caused a larger number of so-called, no-lesion tuberculin reactions than have been recorded and which cannot be classed as part of the "common run," and the "common run" of no-lesion reactions, as an analysis of their occurrence in two distinct groups of tuberculin-tested cattle shows, one a group of over fifty thousand and the other of nearly four million, amounts at most to a fraction of one per cent and is largely composed of true, undeveloped cases of tuberculosis.

NEWS ITEMS

It is estimated that two million people left the farm in 1924, and 1,396,000 quit the town for the land.

American farm land values trebled between the years 1900 and 1920. In some states, the value increased twelvefold.

In the ten-year period between 1914 and 1924, the number of agricultural students enrolled in American colleges decreased about one-third.

At the special session of the legislature of the State of Washington, which was convened during the latter part of 1925, an appropriation of $100,000 was made for indemnities in connection with tuberculosis eradication.

PRESENT STATUS AND FUTURE OUTLOOK OF THE TUBERCULIN TEST*

By S. E. BRUNER,

Pennsylvania Bureau of Animal Industry, Harrisburg, Pa.

Forty-three years have elapsed since the cause of tuberculosis was discovered, and thirty-three years since the first tuberculin test was conducted in the United States. During these years four outstanding facts concerning bovine tuberculosis have been established:

1. The extent and prevalence of the disease in each section of the United States.
2. Tuberculosis is of hygienic importance in its relation and transmission to the meat- and milk-consuming public.
3. Tuberculosis is of economic importance in relation to the live stock industry.
4. Practical proven methods to establish and maintain tuberculosis-free herds.

PREVALENCE

The extent and prevalence of bovine tuberculosis is based on the results of the initial tuberculin test and subsequent retests of free and infected herds and postmortem examination of cattle throughout the United States. It is estimated that of the 64,000,000 cattle in the United States, 2,000,000, or 3 per cent, are tuberculous.

HYGIENIC

In man the transmission of bovine tuberculosis through the consumption of infected meat is very slight, for the reason that in the majority of cases only meat, which has been previously cooked, is consumed. Milk is far more dangerous than meat. Medical authorities estimate than 25 per cent of tuberculosis in man can be charged to the tuberculous cow. Therefore, the repeated ingestion of milk containing tubercle bacilli is dangerous to human beings, particularly young children.

It has been shown by a great many thoroughly trustworthy experiments that the milk of tuberculous cows *practically always* contains the germs of tuberculosis when the udder is tuberculous, and *frequently* where there is generalized tuberculosis, and

*Presented at the 18th annual convention of the International Association of Milk Dealers, Indianapolis, October 12-13-14, 1925.

sometimes when the udder is healthy so far as can be determined during the life of the animal and the disease has not advanced to such an extent as to make it possible to recognize it by physical examination. On the other hand, it is true that in the majority of tuberculous herds in all stages of the disease it is common to find that some of them are producing tuberculous milk, and the mixed milk of the herd is then dangerous.

Economic

From an economic standpoint tuberculosis works financial injury to owners of live stock, as follows:

1. By destroying animals outright—as when tuberculosis is allowed to reach its full development and kill its victim.

2. By reducing the market value of the animals—as in those cases in which the animal is sold before the disease has reached such a stage as to render it entirely unmarketable. Where tuberculosis has prevailed and cattle-owners have become quite familiar with its manifestations, it is the practice to sell such suspected animals. In this way a total loss is avoided but naturally as the animal sold is in bad condition only part of its health value can be obtained. Moreover, any saving that the owners may effect in this way is, unless the animal is killed at an inspected slaughtering establishment, at the risk and expense of public health. Every section of the country where the degree of infection is pronounced, 25 to 35 per cent of such animals, when slaughtered under official supervision, are condemned for food purposes. The packers are well acquainted with these sections and purchase this class of animals accordingly.

The 2,000,000 tuberculous cattle in the United States may be divided into two classes, as follows:

Fifteen per cent, or 300,000 animals, which, upon postmortem examination, are generalized cases and would be tanked for fertilizing purposes. It is conservatively estimated that each such animal is being maintained at a $50.00 annual loss, or a total yearly loss of $15,000,000 is being sustained by cattle-owners so long as these 300,000 advanced or generalized cases of tuberculosis are retained.

The 1,700,000 less extensively affected cases are likewise being maintained at a tremendous annual loss to the owners, the sum of which it is impossible to estimate. In addition to the failure of many animals in this class to yield an adequate return, many of these non-generalized cases spread the infection to healthy cattle.

Moreover, many cattle in this class, if permitted to live, eventually become generalized cases and enter the first-mentioned class.

3. By reducing the breeding value of a herd and its general productivity.

4. By causing a waste of cattle food through feeding it to animals that cannot give an adequate return.

5. By infecting other animals, swine and calves through the milk or by contact.

6. By injuring the reputation of a herd, thereby rendering it difficult to dispose of the animals or their products.

7. By destroying the enthusiasm or interest of the breeder in the maintenance of his herd at a high standard.

There can be nothing more discouraging to a breeder of cattle who has devoted a great deal of time, or the better part of his life, perhaps, and much of his money, to the development of a particular breed or strain than to see his valuable herd ruined by tuberculosis.

Methods

In the distribution of bovine tuberculosis the degree of infection is much greater close to the larger centers of population. This is due to the fact that the cattle-owners are, in the majority of cases, only dairymen. The methods usually followed by these dairymen are to replace members of the herd when they are unprofitable, insofar as milk production is concerned, with fresh cows. This means constant changes in this class of herds, with little or no consideration given to healthy cattle; thus, sooner or later, such herds and premises become infected.

In order to comply with municipal milk ordinances, hundreds of such herds have been tuberculin-tested, the reactors slaughtered, and little or no consideration given to cleaning and disinfecting of the infected premises, no effort made to correct faulty sanitation, herd additions originating from unsafe herds, no definite plan for retesting, little consideration given to the prevention of the disease, and many of such owners are not in full sympathy with the establishment and maintenance of tuberlosis-free herds. As the result of subsequent retesting of these herds it is not unusual for the tuberculin test to detect as many tuberculous animals as on the initial test of the herd. The results of testing this class of herds have led many owners and others

to the conclusion that it is possible to establish and maintain only an occasional herd on a tuberculosis-free basis.

It must be remembered that the tuberculin test alone will not eradicate tuberculosis—it is only one of the many phases of the work. It is admitted by all who have successfully studied the subject that tuberculosis can never be eradicated from herds without the cooperation of owners and the earnest desire on their part that the disease should be suppressed. In addition to the owner's support, it is necessary to have the public interest and confidence in the work.

Plans available for the owners should be practical from the owner's standpoint, keeping in mind that the methods applied will place his herd on a tuberculosis-free basis in the shortest possible time. The average owner cannot afford to tuberculin-test his herd and improve housing conditions unless he is given financial assistance. The officials who direct the work and those in the field should be properly trained and equipped to render efficient service. Quantity, rather than volume, should always be kept in mind. In herds found infected, we should concentrate our efforts on placing such herds on a healthy basis. Reacting animals detected as the result of a tuberculin test must be promptly removed from the herd. Stables, yards, etc., must be promptly and thoroughly cleaned, followed by disinfection. In this respect one thought must be kept in mind—that disinfectants can not destroy germs with which they do not come in contact. The disinfecting of infected premises should be done in all cases under official supervision. Faulty sanitation should be corrected, keeping in mind cleanliness, fresh air and sunlight. Herd additions should be added from herds under official supervision that have passed at least one tuberculin test.

Testing Should be Voluntary

In Pennsylvania we have always been of the opinion that tuberculin-testing should be voluntary rather than compulsory. In our state the testing of cattle is voluntary on the part of each owner. In this respect we have no law. In conducting area testing, nothing less than a township is considered a unit. This unit is qualified by having at least 90 per cent of the herd-owners voluntarily sign an agreement which qualifies their herd to be tested under official supervision according to the provisions of the modified accredited area plan. The county, or other cooperating agencies, are required to provide funds for tags, disinfecting

material, disinfector's salary and expenses, and transportation. After townships qualify, they are tested in the order in which they are received, when personnel and funds for indemnity are available. On September 15, 1925, all herds and cattle in 265 townships in 25 counties have been tested by this voluntary method. Under the area and individual plans we have 25 per cent of Pennsylvania's cattle population under official supervision. Two hundred seventy townships in 25 counties are awaiting test on an area basis, and 3,000 herds awaiting test under the individual accredited herd plan.

Throughout the United States, on August 1, 1925, there were 11,699,335 cattle under official supervision. The owners of 3,621,463 cattle on this date were waiting to have their cattle tuberculin-tested.

The history of tuberculosis of cattle shows that when it is once introduced into a previously unaffected district, its tendency is to spread from farm to farm with a rapidity that depends largely on the cattle traffic. One reason why tuberculosis of cattle was permitted to spread during the present generation was because methods have been made to improve cattle for special purposes, as for beef, milk and butter, and this has led to the purchase of fresh blood. At the same time little consideration was given to health. It has been within the last decade that agencies interested in the improvement of live stock consider health an essential principle in connection with all phases of live stock improvement. This has brought about a condition whereby all concerned with the future interest of the live stock industry have based all programs of importance upon first determining the health of the foundation herd and placing it upon a healthy basis.

Pasteurization not the Solution

There are some who would attempt to solve the problem of milk contamination by pasteurization alone, and while this may be practical under certain conditions it will never become general, nor will it solve the question of bovine tuberculosis. If milk is made safe by pasteurization in lieu of the tuberculin test, insofar as tuberculosis is concerned, it is not practical nor economically sound for each producer to install a pasteurizing plant on the farm. It should be borne in mind that the rural population constitutes a large part of the milk-consuming public; moreover, the farmer is interested in the health of his family even more than

he is concerned about the health of his live stock. Therefore, the enacting of municipal ordinances requiring the pasteuirzation of milk will not prevent the transmission of tuberculosis to the people of the rural districts and villages. The better way to prevent transmission of tuberculosis from animals to healthy beings is to strike at the root of the evil by preventing animals becoming infected with tuberculosis.

Dr. A. J. Cohen is quoted as making the following statement, after making a study of the tuberculosis situation on the Continent:

> "Helio-therapy, the sunlight treatment, is practiced more generally and successfully abroad. This form of treatment is especially useful in bone and joint tuberculosis, a disease of childhood. In Leysin, Switzerland, sanitoria especially designed for this treatment have been in existence for 25 years, while in the United States little has been done for the sufferers from this disease. Bone and joint tuberculosis is not nearly so common as abroad, probably because of the excellent government supervision of our milk supply, but there are enough of these cases to warrant a more definite scientific use of helio-therapy.
>
> "Anti-tuberculosis activities have been better organized and more successfully carried on in the United States than abroad. The reduction of 55 per cent in the death rate from tuberculosis in the last twenty-five years in the United States is a remarkable medical achievement and is due largely to the persistent and able work of the various local and national anti-tuberculosis agencies, strengthened and subsidized by various States. But there is still a great deal to be done."

We concur with Dr. Cohen in his statements, for the following reasons: Europe is doing practically little or nothing in an attempt to eradicate bovine tuberculosis. Authorities agree that bone and joint tuberculosis in children is caused principally by the tubercle bacillus of bovine origin. This type of tuberculosis in children is less prevalent in the urban than rural sections. To quote Dr. Gittings, of the Philadelphia Pediatric Society: "A few years ago cervical tuberculosis in children was rather commonly found in Philadelphia, while now rarely observed." This he attributes to the methods practiced in safeguarding the City's milk supply. The program of treatment which must of necessity be practiced is not the policy in the United States. Ours is one of prevention.

The federal, state and county governments will this year expend more than $15,000,000 in connection with the establishment and maintenance of tuberculosis-free herds of cattle. Summarizing the activity and interest, and anticipating the same activity in the future as at the present, the federal government estimates that within the next twenty-eight (28) years bovine tuberculosis will be reduced to less than ½ of 1 per cent.

The meat packers recognize the economic importance of tubercu-

losis, for the reason that they are in sympathy with it and are assisting the owners and giving proper recognition to sections free of the disease, also materially assisting in the salvaging of the reactors. The milk dealers are likewise rendering a service in several ways, which is having a good influence on the part of the herd-owners. The press, chambers of commerce, and similar agencies are rendering excellent service.

Dr. L. A. Klein, an authority on milk hygiene, in an address before the Eastern States Tuberculosis Conference, held at Providence, R. I., June, 1925, made the following statements:

> "Tuberculosis in its relation to the milk supply, the accredited herd movement, the area testing, has an important public health aspect even though it is possible to destroy the tubercle bacilli in milk by proper pasteurization. First of all, it will be generally admitted that it is better practice to make use of a time-tried and reliable method of keeping tubercle bacilli out of milk than to depend on destroying them after they have gotten in. Pasteurization will still be necessary if milk is free of tubercle bacilli unless suitable precautions can be taken against the possibility of infection with typhoid and other human pathogens, which may be transmitted by milk, but the process would be simplified. The other organisms require less heat to kill than the tubercle bacilli, and if these latter organisms were absent it would not be necessary to heat the milk to as high a temperature. This would lead to economics in the pasteurization and cooling of the milk. Furthermore, a temperature could be used which would allow a greater margin of safety to insure the destruction of any pathogenic organisms present without interfering with the separation of the cream or affecting the taste of the milk. These are all advantages of considerable importance."

It would appear, therefore, that regardless of whether or not milk is pasteurized, it will be necessary to continue the prevention and eradication of bovine tuberculosis through the medium of the tuberculin test.

Not a Submarine Dog

The American had discovered a fine collie dog, and he at once tried to induce its owner, an old shepherd, to sell it.

"Wad ye be takin' him to America?" inquired the old Scot.

"Yes, I guess so," said the Yankee.

"I thought as muckle," said the shepherd. "I couldna part wi' Jock."

But while they chatted, an English tourist came up, and to him the shepherd sold the collie for much less.

"You told me you wouldn't sell him," said the Yankee, when the purchaser had departed.

"No," replied the Scot, "I couldn't part wi' him. Jock'll be back in a day or so, but he couldna swim the Atlantic."

—*South African Dairyman.*

INTERESTING OBSERVATIONS IN THE EXAMINATION OF FECES OF SUCKING CALVES, LAMBS AND PIGS (METHODS AND FINDINGS)

By G. A. ROBERTS

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During the past twelve months we have made rather systematic monthly examinations of the feces from the calves, lambs, and pigs born on the farm of the Escola Agricola de Lavras, some twenty-four calves, a like number of lambs, and some fifty or sixty pigs.

Methods: Numerous methods of making the examinations have been tried, but the one most easily applied and giving us satisfactory results has been that of mixing well (triturating) the feces with concentrated common salt solution (flotation method). This solution has a specific gravity great enough to cause worm eggs to float on its surface, from which they may be removed to a clean glass slide and counted under the microscope. Only in case of eggs of the Ascaris have we found glycerin slightly more efficient than the salt solution.

The quantity of feces to mix with a given quantity of the solution varies somewhat with the character of the feces, but in general we have used the cap of a small, glass, alcohol lamp, holding 9 cc. In it, we put about 1 gram of feces and 8 cc of the solution, which fills the vessel. In order to free as many eggs as possible from the particles of feces, only a few drops of the solution should be added at first to the feces and well emulsified by stirring; then add a few more drops and stir again. After thus well emulsified, the rest of the solution may be added, in larger quantities each time, until the vessel is filled. For emulsifying and mixing, we use a small metal rod, flattened and tapering nearly to a point below.

It requires a little time for the maximum quantity of eggs to reach the top of the solution, hence, after mixing, it should be allowed to stand something like an hour before removing the material for counting.

For the removal of a small, definite quantity from the surface of the salt solution in which the eggs are concentrated, we use the end of a glass rod, 7 mm. in diameter, with a perfectly flat

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end. With this rod, the center of the surface is touched, and a drop of the solution transported to a clean glass slide. With grossly infested feces, as many as 800 eggs have been counted in one such drop.

By using the same amount of feces each time, and removing the same quantity with the glass rod, fairly reliable comparisons can be made. Where infestation is limited, a larger number of eggs may be encountered, but likewise in a much larger field, by touching lightly a clean glass slide directly to the upper surface of the solution in the well-filled vessel. Or, better still, the number of eggs can be considerably augmented by pouring the feces, after having been emulsified and mixed, into a urinometer tube and centrifuging. After standing half an hour, the

FIG. 1. Calf affected with "tristeza dos bezerros."

glass rod may be introduced into the tube, touched to the surface of the fluid, and the drop transported to the glass slide.

Findings: Among the interesting findings, in the beginning, was the frequent occurrence, in the feces, of numerous large eggs, 120-150 x 60-75 microns. These eggs were especially common in the feces of pigs, but were also found in other animals. As the weather became warmer, the eggs increased in number, and various stages of embryonic development were observed. In the end, the nymph and adult stages of a small (microscopic) acarus (*Tyroglyphus*) was found.

It is reported in Brazil as being frequently eliminated with human feces, and accredited as the cause of some gastro-intestinal troubles in man. We have not as yet observed any such detrimental results in animals.

Another interesting feature to us was the occasional finding of rather numerous Ascaris eggs in the feces of calves. This

condition was invariably quite temporary, however, for soon afterwards they were not encountered again in the same animals.

Much more interesting than either of the above-cited, however, has been the invariable finding of small worm eggs in the feces of all nursing calves, lambs, and pigs, but especially common in calves. These eggs have been found only in animals nursing their mothers, but opportunity was not available to make examination of the same-aged animals taking milk in another manner, nor in those not getting milk as part of their diet.

These eggs begin to appear in the feces of animals of seven to ten days of age. The number of eggs usually rapidly increases up to three or four weeks of age, then, after maintaining a high level for some two weeks, begins to decrease as the amount of solid feed increases. It is rare to find this egg in the feces after weaning.

Unfortunately, few autopsies have been available, and the female producing these eggs has not been encountered, though many searches have been made in the feces of animals in which great numbers of such eggs were present.

For these eggs to be discharged with the feces of animals one week old, the female worm must be swallowed by the young animals, or the development takes place within the fetus.

With the evidence at hand, we are inclined to classify it as *Strongyloide* (*Anguillula*) *intestinalis* (*stercoralis*).

The egg is very thin-walled and, when expelled with the feces, has within it a perfectly developed embryo that liberates itself in a few hours (3 to 4), when incubated at a fairly warm temperature.

The egg varies some in shape and in size, but we have not been able to detect any difference in the eggs nor the larvae from those of calves, lambs, and pigs.

The eggs are generally oval, equally bluntly rounded at both ends, but may occur nearly circular. The average size is perhaps 55 x 32 microns, but may vary from 45-60 x 30-35 microns.

The recently liberated larva is about 220 x 16 microns, with an esophagus about one-quarter the body length, and a sharply tapering tail about one-fifth the total length.

The free larva has never been encountered in fresh feces, but always within the egg-shell. Older feces may contain free larvae, or they hatch shortly after being placed in a little water, if the weather is warm.

These larvae seem to undergo development and transformations soon. In 24 to 48 hours, there may be found larvae from 250 microns up to 375 x 17; many are now found dead, but others, very sluggish, are seen shedding their skins (moulting). In another twenty-four hours, there are found many eel-like (*Anguillula*) forms, very active, from 400 microns to 550 x 13, which remain alive in the water culture for at least six weeks.

The significance of these eggs—or the worm that produces them—has not been determined, but if we are correct in our classification, and this worm lives within the intestinal wall, and can enter by way of the skin as well as by the mouth, it most likely at times is a trouble-maker.

It seems to us that it may not be unreasonable to suppose that it possibly has an intimate connection with a most serious common affection in Brazil, principally among calves. Until recently, it had been supposed that a number of troubles existed conjointly in calves.

Now, however, such medical writers as Dr. Marques Lisboa and Dr. Octavio Magalhães believe all such conditions to be one and the same disease, caused by a filtrable virus, but nearly always associated with various other visible microbes, quite frequently an organism of the Pasteurella group.

The numerous forms of the disease have therefore received different names, but because of the frequent combination, perhaps the most common term is pneumo-enterite. However, a large percentage of calves, two weeks to two months of age, or older, and not showing pneumonia or enteritis, often become thin and listless and remaining in this condition for two to four months. Such cases are called peste de seccar (drying-up pest), or tristeza dos bezerris (sadness of calves).

Still another form, which may even appear in adult cattle, consists of abscesses of varying sizes, one or many, scattered over the limbs or body and known as peste dos pulmões (pest of swellings).

Each of the above-mentioned forms may have an acute and a chronic state, and a great many calves die, especially with the enteric form.

To us it seems plausible to think that the irritation to the intestinal wall might be sufficient to cause some physiological, as well as histological, disturbances, and if the specific cause of pneumo-enterite is lurking about, the worm might provide an

easy entrance into the body. Again, if the entrance of the worm is by way of the skin, it might easily provide ingress for pus-producing organisms—and perhaps even filtrable organisms.

In any event, the finding of these eggs in such young animals only, and in such numbers, 800 concentrated in one drop of salt solution, has created considerable curiosity in the mind of the writer.

VETERINARIANS PROMOTE HUMAN WELFARE

It was in 1889 that a veterinarian employed by the United States Bureau of Animal Industry definitely proved the transmission of the Texas cattle fever virus from animal to animal through the intervention of the cattle tick. This fact was the basis for the later discovery that numerous human ailments, notably yellow fever and malaria, are insect-borne. This knowledge has resulted in the virtual elimination of these human scourges from many regions.

There is now in progress in the United States a definite plan for the control and ultimate eradication of animal tuberculosis. It is an established fact that tuberculosis in people, especially in children fed cows' milk, is frequently of cattle origin. The veterinary method of eradicating bovine tuberculosis is therefore one of the most important steps for controlling the bovine type of this disease in humans.

Previous to the discovery by veterinarians of a reliable method of preventive vaccination against hog cholera, this disease was the cause of enormous annual losses. It is not an exaggeration to state that, without this discovery, the price of pork products might now be prohibitive from the standpoint of thousands of consumers. This is also true about beef products, insofar as their price is influenced by the development of modern blackleg vaccines in veterinary laboratories, notably the laboratory at the Kansas State Agricultural College.

During the year ending June 30, 1924, the veterinary branch of the federal service inspected the carcasses of almost 80,000,000 animals intended for food purposes. Furthermore, many municipalities employ veterinary inspectors to maintain wholesomeness of the local food supply of animal origin. If it were possible for everyone to visualize conditions before veterinary inspection was instituted, it would be unnecessary to mention the great benefits derived from that service.

—*By* R. R. Dykstra, in the *Kansas Industrialist.*

EXPERIMENTS ON THE LONGEVITY OF ALCALIGENES ABORTUS

By FRANK P. MATHEWS

Purdue University Agricultural Experiment Station, Veterinary Department, Lafayette, Ind.

1. VARIETY SUIS

In a fetus obtained from a field outbreak of porcine abortion, the presence of *Alcaligenes abortus* was demonstrated by direct isolation, after which the fetus was fed to a gilt during the ninth week of gestation. This animal had no history of previous exposure to abortion and, prior to feeding, gave two negative reactions to the agglutination test for this disease; a requirement to which all gilts conformed before being used in this experiment. The gilt gave a positive reaction to the agglutination test four weeks after eating the aborted fetus and on the 114th day of gestation farrowed eight pigs, one of which was dead. The live pigs were killed and the presence of *A. abortus* was demonstrated by direct isolation, in both fetal membranes and viscera of all pigs from which cultures were made. The fetal membranes and viscera were prepared for feeding to experiment animals by grinding in a meat-chopper, spreading the ground material in a thin layer on glass plates, and allowing it to dry in a cool, dark room.

In order to prove the pathogenicity of the fresh material, 10 grams were fed to a gilt during the tenth week of gestation. The gilt aborted 21 days later and *A. abortus* was isolated from the fetal membranes and viscera of all fetuses from which cultures were made. The agglutination test, conducted four days after abortion, was positive. The ground viscera and fetal membranes were then held for periods of 45 and 59 days and the pathogenicity of the material tested by feeding to susceptible gilts. An amount equivalent to 20 grams of the undried material was fed to each animal. One gilt was fed the material, dried 59 days, during the sixth week of gestation. Normal gestation followed and eleven pigs were farrowed, one of which was dead; cultures were made from the dead pig, from fetal membranes and from the viscera of several pigs killed when farrowed, but *A. abortus* was not obtained.

Received for publication, January 11, 1926.

Several agglutination tests, made during the period of gestation following the feeding, and for six months after parturition, were negative. During this period the sow was bred and, during the twelfth week of gestation, was fed a fresh fetus from a field outbreak of infectious abortion in order to demonstrate her susceptibility. A normal gestation period was terminated four weeks after eating the fresh aborted fetus. The agglutination test gave a positive reaction two weeks after parturition, when the sow was slaughtered and *A. abortus* isolated from the uterus.

An effort was made to demonstrate the presence of *A. abortus* in lymph-glands, mammary glands, ovaries, liver, spleen, and pancreas, but with negative results. After a 45-day drying period, the ground material was fed to a gilt during the fourth week of gestation. Nine live pigs were farrowed at the termination of a normal gestation period. Several pigs were killed as soon as farrowed and cultures were made from the viscera and fetal membranes, but *A. abortus* was not isolated. Guinea pig inoculation was also negative for *A. abortus*. Several agglutination tests, conducted during gestation and for a period of six months after parturition, were negative. This gilt was not proven susceptible. Due to lack of facilities, we were unable to continue the experiment and make further feeding tests of aborted material.

2. Variety Bovis

The only method of testing the longevity of *A. abortus bovis* in naturally infected material was by guinea pig inoculation, as the department does not maintain a herd of cows for experimental purposes. The materials used for this experiment were fetal membranes and aborted fetuses. Ten of such specimens were collected from as many herds and the presence of *A. abortus* demonstrated in all cases by direct isolation. The specimens were then prepared as in the preceding experiment and tested for the presence of live abortion organisms at 30-day intervals.

The first inoculations were made when the material had been dried 90 days. A part of each specimen was macerated in sterile physiological salt solution and injected intraperitoneally. Ten lots of guinea pigs with two pigs to the lot were used for the first inoculations, but five lots of pigs died within five days from an infection other than *A. abortus*. The remaining five lots survived and, six weeks after the inoculation, had developed agglutinins for *A. abortus*. The animals were killed and autopsied and *A. abortus* was isolated from the spleen of each animal.

On the 120th day after the naturally infected material was collected, ten guinea pigs were divided into five lots and inoculated as before. Six weeks later infection was demonstrated by the agglutination test and the isolation of *A. abortus* from two lots, showing that three of five strains of this organism were no longer virulent for guinea pigs, 120 days after elimination from the infected animal. On the 150th day, inoculations were made from the two virulent specimens, but no infection could be demonstrated in the guinea pigs six weeks later, indicating that two strains of this organism, in naturally infected material, had retained their virulence for guinea pigs 120 but not 150 days after expulsion from the infected animal.

CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces the following open competitive examinations:

EXTENSION POULTRY HUSBANDMAN, $3,800.
ASSOCIATE ANIMAL HUSBANDMAN, $3,000.
ASSOCIATE ANIMAL HUSBANDMAN (GENETICS), $3,000.
ASSISTANT ANIMAL HUSBANDMAN, $2,400.

Receipt of applications for these positions will close April 13. The examinations are to fill vacancies in the Bureau of Animal Industry, Department of Agriculture, for duty in Washington, D. C., or in the field, and in positions requiring similar qualifications. A vacancy exists in the position of associate animal husbandman, at Jeanerette, La.

The entrance salaries are shown above. After the probational period required by the civil service act and rules, advancement in pay without material change in duties may be made to higher rates within the pay range for the grade, up to a maximum of $5,000 a year for extension poultry husbandman, $3,600 a year for the associate animal husbandman positions, and $3,000 a year for the assistant animal husbandman. Promotion to higher grades may be made in accordance with the civil service rules as vacancies occur.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or the secretary of the board of U. S. civil service examiners at the postoffice or customhouse, any city.

It has been estimated that a hen will drink twenty times her weight in water in a year.

IMMUNIZATION AGAINST RABIES*

By KURT SCHERN, *Montevideo, Uruguay*

Director, Bacteriological Institute of the Veterinary High School of Montevideo

Translated by Dr. A. Eichhorn, Pearl River, N. Y.

The literature contains data on the experimental work conducted for the purpose of developing a practical procedure for the immunization of dogs against rabies. Presuming that this literature is well known, I simply refer to the textbooks of Kolle and Wassermann, Hutyra and Marek, and others. At this time, the publications of Yoshida, Umeno and Doi, Kondo, Eichhorn and Lyon, Reichel, Schnurer, Kraus, and others are of special interest.

The data of the Japanese are of importance to the veterinarian, inasmuch as, according to their claims, it is possible to immunize dogs against rabies, by a single subcutaneous injection of vaccine, for the duration of approximately one year. The Japanese and the North American statistics proved conclusively the practical results of this vaccination, so that in Japan as well as in the United States, compulsory requirements exist for obligatory vaccination of dogs. These actions would tend to eliminate all doubt, which might be raised against such vaccination, from the standpoint that dogs, immunized following bites by a rabid dog, may become virus carriers or disseminators of virus. The bureaucratic veterinary services of Europe take advantage of such possibilities and desire to continue the quarantine measures in full force, in spite of the fact that quarantining is an undesirable measure to a great majority of the population. As a result, it is regrettable that in this regard Europe trails behind Japan and America, in spite of the fact that, according to the available data from Japan, the aforesaid bureaucratic veterinary services have no longer any ground to question the great benefit to be derived from vaccination against rabies. The fact that, out of 104,629 dogs vaccinated in Japan, only 41 developed the disease, whereas, of the unvaccinated dogs in the same period, 1696 dogs succumbed to rabies, would surely convince me of the attitude of Kraus that the procedure stood its "fire test."

*Berliner Tierarztliche Wochenschrift, xxxxii (1926), 1.

In my experiments, I have originally utilized a vaccine prepared according to the Japanese method; afterwards a vaccine with some modifications of the Japanese procedure.

It has been definitely established that the vaccine is not injurious to dogs. In not a single case in my experiments have the experiment dogs shown any reaction following the injection of the vaccine.

In the experiments, the designated dogs have been immunized, and later subjected to a control infection with street virus. Two dogs which were not immunized served as controls. The details of the experiments are given in table I. The tabulated experiments show that the control animals died of rabies, whereas the immunized dogs withstood the fatal rabies infection and remained alive. Further experiments confirmed these results, which is proven from the dogs included in table II.

The dogs utlizied in this experiment have also resisted the fatal rabies infection which killed the control dog in ten days.

I do not deem it necessary to record at this place all the experiments inaugurated, as I believe that the tables published show conclusively the effectiveness of the rabies vaccine. It should be mentioned that the immunized dogs, which I allowed to be bitten by rabid dogs during the experiments, remained alive.

It was of importance to obtain information as to whether a prophylactic post-infectional immunization with this vaccine would be followed by the desired results, even if only a single injection of the vaccine were given. For this purpose, dogs, and in one case a hog, were utilized, animals which were brought to the clinic because they had been bitten by rabid or suspected rabid animals. In the cases in which the vaccine was administered within fourteen days following the bite, the treated animals remained alive; otherwise they died. It is advisable, therefore, to treat the bitten animals as early as possible after the exposure. This conclusion is also confirmed by Reichel in his experiments.

It is of interest that the Government of Uruguay has charged the Bacteriological Institute of the Veterinary College with the preparation of the vaccine; and, besides, that a bill has been presented in the Parliament requiring compulsory vaccination of the dogs against rabies in order to protect the inhabitants of Montevideo from rabies. The experiments are being continued along various lines.

TABLE I—*Tests of immunity in vaccinated dogs. All dogs tested December 12, 1924.*

NAME OF DOG	DATE OF VACCINATION	VACCINE INJECTED (CC)	DESIGNATION OF VACCINE	INFECTION WITH FRESH STREET VIRUS AND MODE OF INFECTION	RESULTS
Freya	10- 1-24	5.0	Series B Nos. 19, 20, 22 of 11-27-24	0.1 cc subconjunctivally. Some of the virus also rubbed on the scarified cornea. Severe infection.	Lived.
Pablo	11-28-24	5.0	Series C Nos. 2, 3 of 11-27-24		Died 1-1-25 from an intercurrent cause, probably as a result of poisoning.
Felipe II		5.0		Scarification of the cornea and conjunctiva. Street virus rubbed on the same. Slight infection.	Lived.
Carlos		2.0			Lived.
Nelitta		2.0			Lived.
Elena		2.0			Lived.
Eduardo		2.0			Lived.
Louis	Control			Infection the same as dog Freya. Severe infection.	Died. Rabies. 12-30-24.
Miquel	Control			Infection the same as Felipe II. Slight infection.	Died. Rabies. 1-10-25.

TABLE II.—*Further tests of immunity in vaccinated dogs. All dogs tested January 13, 1925.*

NAME OF DOG	DATE OF VACCINATION	VACCINE INJECTED (CC)	DESIGNATION OF VACCINE	INFECTION WITH STREET VIRUS WHICH WAS KEPT FOR FOUR DAYS IN GLYCERIN	RESULTS
Prince	10- 1-24	5.0	Series B Nos. 19,20,22	Subconjunctival and corneal, following scarification of cornea	Lived.
George		5.0	Series B No. 11		Lived.
Clemens		4.0	Series B Nos. 19,20,22		Lived.
Dandy	10-10-24	5.0	Series B Nos. 26, 27		Lived.
Phylax	Control				Died. Rabies. 1-23-25.

EIGHT RECEIVE LICENSES

Eight of nine applicants were successful in passing the examinations held by the Michigan State Board of Veterinary Medical Examiners, at East Lansing, January 28-29, 1926. Licenses were granted to: Drs. James O. McCoy (Ont. '25), Patrick J. Kelly (Ont. '25), L. R. Stauffer (O. S. U. '25), A. D. Spooner (Ont. '25), of Detroit, and Carl J. Fox (Mich. '26), Harry L. Downey (Mich. '26), Clarence Walquist (Mich. '26), Arthur L. Delez (Colo. '25), of East Lansing.

The 1926 National Dairy Show will be held in Detroit, Mich., October 16 to 21.

CLINICAL AND CASE REPORTS

(Practitioners and others are invited to contribute to this department reports of unusual and interesting cases which may be helpful to others in the profession.)

PULMONARY CANCER IN A SHEEP

By A. SAVAGE, *Winnipeg, Canada*

An aged ram having died suddenly, its owner opened the carcass in an attempt to ascertain the cause of death. He discovered nothing to satisfy his curiosity except in the lungs, one of which, the right, seemed so unusual that he sent it here for examination.

Description: The organ was of the four-lobed type, and had already been incised in three places. The basal lobe was distinctly and uniformly congested, the apex only slightly so. Between these extremities was a pale, yellowish-grey area of dense, firm tissue, involving all of the cardiac and mediastinal lobes, as well as the cephalic margin of the basal one. Numerous small patches, identical in color and consistency with the central area, were scattered over the surfaces of the other lobes. These patches were of highly irregular form; their size varied from mere points to distinct blotches almost two centimeters in diameter. Against the red of the basal lobe, they showed very strikingly.

Pleural surface, smooth. Deep palpation indicated that the lung substance contained numerous firm masses such as were visible on the surface.

Incision revealed little not already discerned. Excluding the two central lobes, which were solid, the organ was congested throughout and contained countless granules and tubercles of yellowish-grey tissue which, where thickest, gave it a distinctly speckled appearance. From a few points on the cut surface of the dense central area, small quantities of pus could be expressed. This was greenish yellow, rather viscid, and without objectionable odor. The respiratory passages contained a moderate amount of finely frothy mucus and a few strings of clotted blood.

Microscopic: Sections for microscopic study were made from several portions of the lung. Examination of these showed

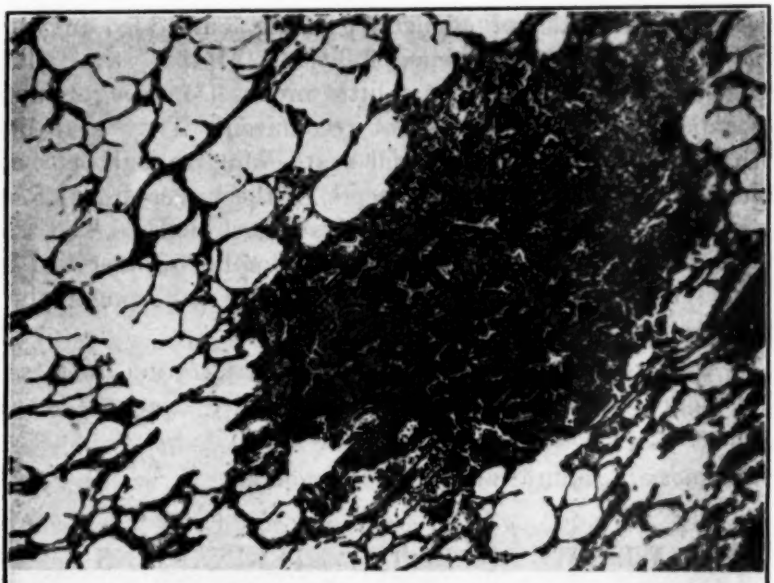


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 1. Cancer "islet" in lung. x 50.
Fig. 2. Adenomatous follicles included in above. x 225.
Fig. 3. Portion of one follicle showing individual cells. x 650.

masses and "islets" of connective tissue, embedded in which were small, irregularly shaped follicles. Most of the follicles were empty, save for either a little mucus (?) or a reticulum, the substance of which was not recognized. They were lined with a single layer of cuboidal epithelium, though, at some points, this was several cells deep. In the larger areas of new tissue, the follicular arrangement was most marked and complicated at the periphery, gradually becoming simpler and less distinct towards the center, where it gave way completely to fibrous connective tissue.

In a few fields, areas of round-cell infiltration were seen. Tiny, purulent foci were encountered only near the smaller respiratory passages.

Diagnosis: Indurating adeno-carcinoma.

WE OWE MUCH TO VETERINARIANS

Few of us realize the great part veterinarians serve in the promotion of human welfare. We think of them only as students of affections of dumb animals and forget that as a secondary result of their work, human life is lengthened and the human body made safer from the ravages of disease.

We all know that numerous human ailments, notably yellow fever and malaria, are insect-borne and think no farther. As a matter of fact, however, the basis for this discovery is found in the experiments of a veterinarian who, in 1889, conclusively proved that Texas cattle fever virus was transmitted from animal to animal by means of the cattle fever tick.

We all know that tuberculosis is one of the scourges of the human race, yet many of us overlook the fact that it frequently has its origin in the milk of diseased cows, and that one of the big battles veterinarians now have on their hands is the eradication of tuberculosis in cattle, swine and poultry.

Veterinarians stand on guard at the centers of animal slaughter, inspecting the carcasses which pass before them and condemning those which are unfit for human consumption. During the year ending June 30, 1924, they inspected the carcasses of almost 80,000,000 animals intended for food purposes.

Truly we owe much to veterinary science. It is well for us to pause occasionally and consider this.

—*American Hereford Journal.*

REVIEW

A Manual of the Parasitic Protozoa of Man. Charles F. Craig, M. D., M. A. (Hon.), Lieutenant-Colonel, Medical Corps, U. S. Army, D. S. M. viii+569 pages with 95 illustrations in the text. J. B. Lippincott Co., Philadelphia, 1926.

In the absence of any book adequately covering this particular field from a medical standpoint, Lt. Col. Craig has undertaken to fill the gap by providing a working manual that is not in any sense a zoological treatise. Health officers, practitioners, teachers, investigators and students alike, will find much valuable material in this book.

Considering the importance of some of the diseases caused by protozoa, such as the malarial fevers, amoebic dysentery, sleeping sickness and others, a knowledge of the subject of protozoology is just as important as a knowledge of the closely related subject of bacteriology. Both have much in common. As a matter of fact, there are those border-line organisms, which have so much of each group in common, that they are awaiting final and definite classification. The author has purposely omitted the discussion of those organisms, claimed by some to be protozoa (Spirochetes, Rickettsia), for which there is no evidence of their protozoan nature. Likewise, the Chlamydozoa are omitted. In the discussion of each parasite is included a paragraph on experimental infection of lower animals.

The text is conveniently arranged. A list of references is appended to each chapter. Besides the general index, an index of authors is included. It is here that one may get some idea of the importance of the relationship between the subject at hand and comparative pathology. In the list of investigators, whose findings the author has consulted or quoted, are noted the following, all more or less well known to veterinarians: Stiles, Hassall, T. Smith, Theiler, Railliet, Nocard, Leclainche, Kofoid, Chandler, Crawley and others. A technical appendix includes formulae for culture media and staining methods used in working with protozoa.

In every respect, this book maintains the high standard of all Lippincott publications.

ABSTRACTS

Über den akuten Paratyphus der Ferkel (On the Acute Paratyphus of Young Pigs). R. Manninger. Deutsche Tierärztliche Wochenschrift, Hannover, xxxiii (1925), pp. 844-847.

Paratyphus in young pigs has been found very frequently in Hungary, since Hutyra, in 1912, established the first case. While the disease formerly appeared rather insidiously, and practically without exception led to ulceration in the large intestine, recently it has been found more and more frequently in the form of acute paratyphus, without localization in the large intestine. Especially since 1923, the epizootics of acute paratyphus have increased, so that this form of the disease now predominates over the chronic one. In acute paratyphus, all the diseased pigs in the affected herd show the picture of an extremely acute, febrile, infectious disease. A knowledge of acute paratyphus is of great practical importance, as it is easily mistaken for other infectious diseases, such as erysipelas and acute hog cholera. Acute paratyphus affects, as a rule, pigs at the age of two to four months. Refined, rapidly maturing breeds have been found to come down with this disease earlier than those of a more slowly maturing tendency.

Symptoms These are not diagnostic. The small animals become feverish, quit eating, hide in the litter, are strikingly feeble and die, after two to four days of illness, without showing any particular terminal symptoms. White pigs show intense red discoloration of the skin on the ears, belly and inner surfaces of the extremities. This discoloration appears on the ears on the first day of illness. Soon thereafter, the skin of the belly and inner surfaces of the legs take on a cinnabar-red color. Diarrhea was observed only in a few cases. Coughing is noticed at times, however, only in herds where paratyphus occurred simultaneously with enzootic pig-pneumonia. Multiple crustaceous eczema was encountered in many pigs.

Autopsy findings: In every case, one finds enlargement of the spleen. The changes in the spleen, mostly in the form of a pronounced hyperplasia, are the most prominent, and at times the only characteristic signs of the disease. The enlargement is especially pronounced in the middle third. The borders are

rounded and the capsule is tightly stretched. The color of the spleen is dark blue. On the cut surface, where the enlarged lymph follicles are easily visible, it is bluish red. Hemorrhages and acute swelling of the lymph-glands also point to acute septicemic disease. A few hemorrhages appear, in almost every case, in the cortical layer of the kidneys. These hemorrhages are small, scattered and almost unnoticeable. A few small hemorrhages may also appear on the epicardium, pleura and very exceptionally in the mucous membranes of the small and large intestines. The lymph-glands, especially those of the region of the throat, as well as the intestinal lymph-glands, are highly swollen, watery and moderately reddened on the cut surface. Besides these changes, one may, at times, find acute catarrh of the stomach and intestines, with red spots on and swelling of the mucous membranes, as well as swelling of Peyer's patches and the solitary follicles.

Cause: The acute as well as the chronic form of swine paratyphus is, in Hungary, caused solely by the *Bacillus suipestifer* (Typus Kunzendor) without any participation on the part of the filtrable virus of hog cholera. Filtered blood from pure paratyphus cases has repeatedly proved non-infectious for swine susceptible to cholera. The *B. suipestifer* can be demonstrated in large numbers in the blood and organs of acutely sick animals. The organisms appear mostly as short, bipolar-stained rods. In chronic paratyphus, the bacilli are found mostly in the intestinal tube and its lymph-glands. In other organs and blood they are few or entirely absent.

Differential diagnosis: In the differential diagnosis, two diseases are especially to be considered: the septicemic form of swine erysipelas and the acute form of pure hog cholera. The septicemic form of erysipelas is easily confused with acute paratyphus, inasmuch as it is characterized by skin discoloration and acute swelling of the spleen. However, in erysipelas the skin discoloration changes from a bright red to a bluish red color, soon after the onset of the disease. The color of the spleen is reddish brown, instead of bluish brown as in paratyphus. Softening of the spleen is also more marked in erysipelas than in paratyphus. Hemorrhagic inflammation of the gastro-intestinal mucous membrane is quite common in erysipelas, while only rarely encountered in paratyphus. A serofibrinous peritonitis suggests erysipelas.

In acute hog cholera one finds: a general hemorrhagic condition, dark-red discoloration of the bone marrow, blackish-red lymph-glands and no swelling of the spleen. Hog cholera attacks older animals as well as young ones, while paratyphus is mostly a disease of growing pigs.

Predisposing causes: The *B. suipestifer* is incapable of producing disease in swine without the aid of predisposing factors. Especially is lack of calcium of great importance. Rachitis is, therefore, almost always associated with paratyphus. Too monotonous feeding with grains, such as barley, supplies an excess of phosphoric acid, which leaves the body in combination with alkalies, thus depriving the animal of mineral matter. Lack of protein and vitamins, as well as excess moisture in the house, also have been found to predispose markedly to paratyphus.

Treatment. Intelligent adjustments of errors in feeding and housing give prompt and positive results without the aid of vaccination or similar treatments.

H. J. S.

HYPERGLUCEMIA PRODUCED BY AIR INJECTION INTO THE UDDER OF LACTATING ANIMALS. E. M. P. Widmark and O. Carlens. Biochem. Zeit., clviii (1925), pp. 1-10. Abst. in Chem. Absts., xix (1925), p. 3532.

The injection of air into the udder of cows causes a marked hyperglucemia of short duration. Glucose appears in the urine when the blood-sugar value rises above 0.1 per cent, which seems to be the threshold value for cows. To the hyperglucemic action is ascribed the value of air injection into the udder in cases of paralysis puerperalis in cows.

F. A. C.

A PRELIMINARY REPORT ON THE TREATMENT OF SHIPPING SICKNESS OF HORSES WITH HEMORRHAGIC SEPTICEMIA SERUM. C. J. Marshall and W. J. Lee. Univ. of Penna. Bul., xxvi (1925), 13.

Six of a shipment of twenty-six horses became sick, with what was supposed to have been influenza, soon after arrival in Philadelphia. Following the usual treatment, three animals died of pneumonia. The remaining three were treated each with 100 cc of anti-hemorrhagic septicemia serum intravenously. No other treatment was given. Of these three, one died, one developed

purpura hemorrhagica but completely recovered, and the other made a prompt recovery. Each of the twenty remaining horses of this shipment was given 5 cc of hemorrhagic septicemia aggressin, with the result that all escaped being sick.

Twenty-five cases, complicated and uncomplicated, were treated with anti-hemorrhagic septicemia serum, with the result that three died. The others made prompt recoveries. The authors are of the opinion that certain forms of so-called shipping fever are due possibly to bipolar infection. If so, the treatment should be considered bacteriologically correct. From the results so far obtained, they judge that influenza, with its numerous complications, can be effectively and economically handled with anti-hemorrhagic septicemia serum.

S. S.

TYPEINDDELING AF MASTITISSTREPTOKOKKER FRA KVAEG EFTER DERES FORGJAERINGSFORHOLD (Classification of Mastitis Streptococci from Cattle on the Basis of Their Carbohydrate Reactions). E. Mejlbo. Den Kgl. Veterinaer-og Landbohöjskoles Aarsskrift, Copenhagen, 1924.

As the title of this paper indicates, the author has studied mastitis streptococci from cows with a view to forming classification of these microorganisms. In all, 290 samples of milk were studied, 147 containing mastitis streptococci. Some cultural studies were made, but no serum reactions were included in these studies. The medium used:

(1) A slightly alkaline, sterile, sugar-free bouillon 2 per cent (oxo-bouillon, Liebig Co.), 1 per cent peptone (Witte), is prepared.

(2) 0.5 per cent of the carbohydrate to be tested is added to the ready-made bouillon, together with a suitable amount of sterile, watery, litmus solution. The mixture is sterilized by steaming once (100° C.) for only fifteen minutes.

(3) After cooling to about 50° C., sterile active horse serum is added in a quantity equivalent to a content of 10 per cent of serum.

(4) The medium is now ready for distribution, under aseptic conditions, in test-tubes, 3-3.5 cc in each. Finally the tubes are heated in a water bath at 58° C. for thirty minutes, partly to inactivate the serum, and partly to destroy germs that may have been accidentally admixed during the distribution in tubes.

The author states that this is the standard method of preparing fermentation test media employed in his laboratory, and it has proved entirely satisfactory through years of trial. A table shows the classification of the streptococci.

H. J. S.

ARMY VETERINARY SERVICE

CHANGES RELATIVE TO VETERINARY OFFICERS

Regular Army

The following officers of the Veterinary Corps are relieved from duty at the Army Veterinary School, Washington, D. C., and from further temporary duty at the Medical Field Service School, Carlisle Barracks, Pa., and directed to report for duty at the station respectively indicated below:

Effective on or about June 4, 1926:

Captain S. A. Grover to Fort Howard, Maryland.
Captain G. J. Rife to Fort Sill, Oklahoma.
Second Lieutenant V. C. Hill to Fort Myer, Va.

Effective on or about June 29, 1926:

Second Lieutenant Elmer W. Young to Presidio of Monterey, Calif., via transport from New York to San Francisco.

Effective July 1, 1926:

Captain J. D. Derrick to Marfa, Texas.
Captain P. H. Hudgins to Fort Riley, Kansas.
Captain K. E. Buffin to Fort Des Moines, Iowa.
Captain J. E. Noonan to Fort Sam Houston, Texas.
Second Lieutenant H. R. Leighton to Fort Sill, Okla.

Reserve Corps

New Acceptances

Captain:
Jones, Frank Robert.....2225 Irwin St., Fort Worth, Texas.
First Lieutenant:
Bower, John Henry.....1324 Bush St., Santa Ana, Calif.
Second Lieutenant:
Church, Harold Lincoln.....Battle, Creek, Nebraska.
Davis, Charles Louis.....1416 E. 20th Ave., Denver, Colo.
Miller, Albert R.....9149 E. Jefferson Ave., Detroit, Mich.

Promotions

First Lieutenant Clarence Virgil Williams, Box 55, Big Horn, Wyoming, promoted to grade of Captain.

Second Lieutenant Louis Goldberg, 2009 South 9th St., Philadelphia, Pa., promoted to grade of First Lieutenant.

Separations

First Lieutenant James Henry O'Brien, 134 Howe St., Marlboro, Wyoming, failed to accept reappointment.

ANIMAL CONSERVATION IN WAR

The September-October, 1925, issue of the *Quartermaster Review* contained a very fine article, "Animal Conservation in War," by Dr. N. S. Mayo, who holds a commission of Lieutenant Colonel in the Veterinary Reserve Corps. The article emphasizes the fact that the greatest loss of horse and mule power during hostilities is due to starvation and lack of care. This condition may become intensified, as time goes on, due to the increase of motor transportation during times of peace and the corresponding decrease in the number of men who know anything about handling animals.

MISCELLANEOUS

DR. NYE RECEIVES APPOINTMENT

Dr. William C. Nye (Colo. '20), of Boise, Idaho, has been appointed Director of the Bureau of Animal Industry of the Idaho Department of Agriculture, by Governor Moore, effective February 1, 1926. Dr. Nye succeeds the late Dr. Wendell R. Smith.

Born in Ogden, Utah, in 1895, Dr. Nye, with his parents, moved to Idaho in 1900, taking up a ranch near Rigby. After being graduated from the grade and high schools of Rigby, he

DR. W. C. NYE

entered the Colorado Agricultural College and took up agriculture, specializing in animal husbandry. After a year and a half of agriculture, he transferred to veterinary medicine and received the degree of D. V. M. in 1920.

Dr. Nye entered practice at Rigby, Idaho. In 1923, he was appointed Deputy State Veterinarian, and for three years has been engaged in tuberculosis eradication. He has been a member of the A. V. M. A. for five years.

COMMUNICATIONS

A GLIMPSE OF VETERINARY CONDITIONS IN EUROPE

To the Editor:

On my trip around northern Europe, I visited veterinary institutions in England, Norway, Sweden, Denmark and Germany. In England, veterinary conditions were said to be back to a pre-war status. A splendid new building has been erected immediately adjacent to the Royal Veterinary College. This building is for animal disease research.

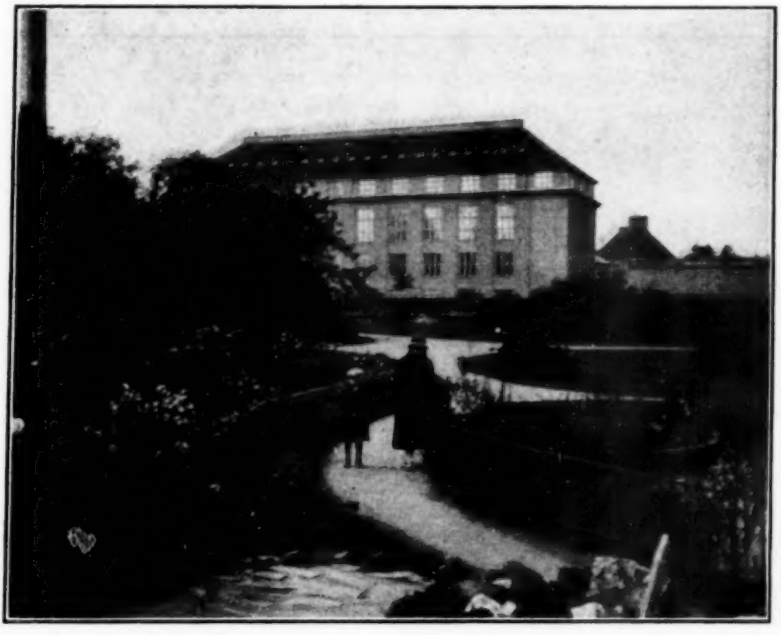
In Norway, a group of spacious and elegant buildings is being put up for the new veterinary college in Oslo. About 120 Norwegian students are studying veterinary medicine in different countries of Europe. As most Norwegian veterinarians are still young, they are facing an over-production of veterinarians in Norway.

Veterinary Institute with front of Clinic Buildings of Veterinary College, Oslo, Norway

The veterinary college in Stockholm is a model institution. The surgery department is almost extravagantly equipped, including such things as X-ray, diathermic, moving-picture, projection, photographic and microscopic apparatus. There is another most excellent feature—a spacious, glass-covered court, where horses may be examined and exercised without the interference of climatic inclemencies. However, it is difficult to say

which department is best equipped, as each one has practically everything that an investigator of veterinary subjects could desire. The museums are wonderful. I was also impressed with the intense activity in all departments of the College, research playing a prominent note in every man's work.

The Danish College is also fine. Several new buildings have been added to this old and famous institution, giving it a very modern appearance. Here also are some wonderful museums. This College has about 300 students this year, 96 being from Norway, 2 from Finland and the rest being Danes. I asked if they did not expect an over-supply with so many students



View of campus of the Royal Veterinary and Agricultural College, Copenhagen, Denmark

enrolled. The reply was that, although Denmark now has more active veterinarians than any other country, in proportion to the population, it is almost impossible to obtain vicars for anyone who may need one. This simply means that the Danish farmers fully appreciate the value of veterinary service, and that Danish veterinarians have proved their usefulness.

In speaking of Sweden, I forgot to mention that the college there has 100 students. They have gotten to the very desirable stage of being able to limit the enrollment according to the needs of the country. This year, they accepted only 20 new

native students. The total enrollment of Scandinavian veterinary students is about 422, not including Finland, as I have no exact information about veterinary conditions there. The combined population of Norway, Sweden and Denmark is about eleven millions. It, therefore, seems that they should have an adequate supply of embryonic veterinarians.

The veterinary college in Berlin is also a large and well-equipped institution. I think they told me that they had 100 students this year. Since the war, this College has suffered serious financial wants, and I was shown much equipment that had not been used for a long time, due to lack of money. However, the Germans seem to be able to do good work in spite of

New Building for Veterinary Research, London, England

hard times. It appears so, at least, from the numerous excellent publications that they put out.

In Hungary, the war has left is stamp on practically everything, and the old and honorable Royal Hungarian Veterinary College is no exception. Its faculty is as good as ever. The buildings, quite large and adequate, are in need of repairs of various sorts. The clinic departments, especially the large animal clinics, could use some new buildings and equipment to good advantage. Lack of money is evident. I am, however, much impressed with the way these men make use of what they have. In spite of serious deprivations, they are able to turn out

research that would do them credit even if they had an abundance of wealth. The student enrollment is now about 300. Hungary has already an over-supply of veterinarians, and it is a matter of deep concern with many as to what can be done to provide work for all these students when they get out.

I read the JOURNAL with more interest than ever, and I am glad to note that the next A. V. M. A. meeting will be within reach of an ordinary mortal.

H. J. STAFSETH.

Budapest, Hungary, December 17, 1925.

WHY NOT ANIMAL INDUSTRY?

TO THE EDITOR:

Probably no part of the address made by President Penniman, of the University of Pennsylvania, at the conference held at the Veterinary School in January, attracted more attention, or is more deserving of consideration, than his reference to the failure of the general public to realize the broad extent of the activities of the veterinary profession and his suggestion that the cause of this might be that the term "veterinary" does not fully describe the work which engages the veterinarian of today, and that it would be advisable, therefore, to select a more suitable term. In an editorial referring to Dr. Penniman's remarks, which appeared in the February number of the JOURNAL, the term "comparative medicine" is proposed. This suggestion has several things to recommend it. The term "comparative medicine" is more descriptive of the veterinary curriculum than the words "veterinary medicine," and it would also be suitable for the name of the degree, which could be designated "Doctor of Comparative Medicine," which, by the way, was the degree conferred by the old Chicago Veterinary College.

There are some respects, however, in which the term does not appear to meet the requirements. It would not be generally understood to include the animal husbandry subjects, which are properly a part of the veterinary curriculum. This is probably not a very serious objection, but the word "veterinary" is used in other connections in which the term "comparative medicine" does not appeal to me as an entirely satisfactory substitute, as in the name of the Veterinary Corps of the Army, and in the name of a board or departmental division in charge of state veterinary work.

"Animal industry" would seem to be a more satisfactory term. I am not ready to assert that this is the best possible substitute, and I should very much like to see other names suggested, but the term "animal industry" is deserving of consideration for several reasons. It has the great advantage of being at present in use in the title of the federal and several state bureaus of animal industry, and it should therefore be associated in the mind of the general public with all of the various activities of the veterinary profession. It could be used as a substitute for the word "Veterinary" in the name of the Army Veterinary Corps and other veterinary organizations, it is sufficiently broad in its meaning to cover every subject in the veterinary curriculum, and it could be used to designate the degree.

Of course, the question will be asked: What would the graduate of a School of Animal Industry be called? Several years ago, the late Dr. Leonard Pearson suggested the title of Animal Engineer as more descriptive of the work of the veterinarian than the term now in use. Perhaps others may have suggestions to offer covering this phase of the subject.

LOUIS A. KLEIN.

Philadelphia, Pa., March 5, 1926.

VETERINARIANS CLEAR UP PUZZLING HUMAN ILLNESS

Dr. C. Vanderwarf (McK. '10), of Chicago Heights, Ill., recently played the leading role in clearing up a mystery which had been puzzling local physicians for several months. A disease which had caused the deaths of three persons and serious illness in five others, at first thought to have been typhoid fever, was not correctly diagnosed until Dr. Vanderwarf suspected trichinosis. The diagnosis was confirmed by Drs. H. B. Raffensperger and J. S. Bengston, of Chicago, who made an examination of the remainder of a hog carcass, portions of which had been eaten by the afflicted parties.

Just another instance showing the need for a more comprehensive system of local meat inspection and, at the same time, illustrating one way in which the local veterinarian can be of useful service. The Chicago Heights *Star*, for February 26, 1926, carried a column article concerning the incident—one of the best pieces of publicity for the local veterinarian that we have seen for a long time—well-earned and unsought.

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1925-1926

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ASSOCIATION MEETINGS

UNIVERSITY OF PENNSYLVANIA CONFERENCE OF VETERINARIANS

The Conference of Veterinarians held at the University of Pennsylvania School of Veterinary Medicine, Philadelphia, Pa., on January 5-6, 1926, was the best attended and most enthusiastic meeting of its kind ever held at this school.

The morning session on Tuesday, January 5, was opened by Dr. Louis A. Klein, who presided during the session. The first speaker was Dr. Josiah H. Penniman, president and provost of the University. Dr. Penniman spoke at length on the importance of veterinary medicine to human welfare. In the course of his remarks, he announced the opening of the new graduate courses which are now available. He also emphasized the importance of research, which should be encouraged in every possible way. Dr. Penniman stressed the idea of changing the name of the profession from that of veterinary, which, from its derivation, refers to horses, to that of a more comprehensive term which would indicate the true nature of the field being covered by this profession.

Dr. Malcolm J. Harkins, of the Research Institute of Cutaneous Medicine, was the next speaker. His subject was "Ultramicroscopical Organisms (Viruses)." Dr. Harkins gave a very comprehensive report on the work being done on these viruses, and emphasized the important early investigations on animal diseases, through which methods were evolved which led to the discovery of the etiological factors of many diseases of man; for example, the discovery of the filtrability of the virus of foot-and-mouth disease.

Dr. Harkins referred to the correlation of many of the diseases due to viuses, the similarity of their effect on the host, their neurotrophic affinity and the presence of intranuclear and intracystic inclusions. He also spoke quite in detail on herpes simplex (fever blisters) and exhibited rabbits to show how this comparatively mild disease of man produces death from a meningoencephalitis when transmitted to rabbits. Dr. Harkins concluded his talk by referring to his attempts to confirm the recent claims of Dr. W. E. Gye, of London, England, on the etiology of cancer. He enumerated the many difficulties encountered and

stated that to date he had not succeeded. This work was carried out with the Rous chicken sarcoma (which is caused by a virus), and a well-developed tumor in a fowl was exhibited.

Next a cow was exhibited by Dr. V. G. Kimball, showing great enlargement of all external lymph-glands. A complete history of the case was given. After thorough discussion of the case the animal was destroyed and a postmortem examination was made. A final diagnosis of multiple sarcoma was made, which was sustained by laboratory examination of the tumor tissue.

The afternoon session, which was presided over by Dr. G. A. Dick, was started promptly at two o'clock. Mr. R. L. Benson, of Coventry Farm, Princeton, N. J., related his experience as a breeder of Guernsey cattle in handling abortion disease. He explained how his first herd had been assembled from various sources and that it turned out to be almost one hundred per cent infected with the disease. This herd was a complete failure from a reproductive standpoint, and had to be discarded. He tried again and used more care in the selection of his animals. Despite his precautions, however, he later discovered that some of his cattle were infected. Realizing the seriousness of the situation, he decided either to eradicate the disease or give up the cattle-breeding business.

Drs. E. C. Deubler and M. F. Barnes were consulted. They introduced the Pennsylvania plan. The herd was tested, the reactors being segregated on another farm. Mr. Benson's experience has been that he would have saved money had he slaughtered all the reactors at once; this, despite the fact that one cow was worth $19,000. By repeated testing and elimination of the reactors, Mr. Benson now has a herd free from the disease. A very lively discussion followed, which indicates that this subject is one of the most interesting before the profession. Some of those speaking regarded the method of testing and slaughter of the reactors as the best solution of the problem, while others considered it too radical and also too costly for most owners. Vaccination as a means of controlling the disease was advocated by several.

Dr. John W. Adams followed on the program. He demonstrated an operation for amputation of a cow's claw, explaining every step in his inimitable way.

The evening session, presided over by Dr. John W. Adams, was a great success. Dr. John W. Harshberger gave an illustrated

lecture on "The Cultivated Plants of the Desert Indians of the Southwest," which was of great interest. He was followed by Dr. William H. Moore, a big-game hunter, who gave an illustrated address on some of his hunting trips in the Rocky Mountains, which was thoroughly enjoyed by everyone.

A smoker was then indulged in and everyone had an opportunity to visit with old friends. It is needless to say that this session extended late into the night.

The Wednesday morning session started promptly at ten o'clock. Dr. V. G. Kimball was in the chair. Mr. J. W. Parks, president of the Pennsylvania State Poultry Association, was the first speaker. Mr. Parks spoke of the economic importance of the poultry industry. He also indicated how the veterinarian can assist the poultryman, and gave other facts of considerable value to those present.

Dr. E. L. Brunett, of the New York State Veterinary College, Cornell University, was the next speaker. He addressed the meeting on the subject of poultry diseases, calling attention to what the profession has already accomplished in the study of these diseases. Dr. Brunett gave the latest information on the prevalent diseases of poultry. The subject was thoroughly discussed by several of those present.

Dr. B. M. Underhill presided over the Wednesday afternoon session. Dr. R. S. Amadon, formerly of the North Dakota Agricultural College and Experiment Station, and now Professor of Veterinary Physiology at the University of Pennsylvania School of Veterinary Medicine, gave a paper on "The Study of Ruminant Digestion (Bovine)." This was one of the most interesting papers of the meeting. It consisted of a preliminary report of experimental work done at the North Dakota Station, which has not been published.

Last, but by no means least, was the paper by Dr. B. A. Beach, of the University of Wisconsin, on the subject of Johne's disease. The methods of testing and the manner in which johnin is prepared was given in detail. This subject is one in which all veterinarians are becoming increasingly interested, and for this reason it was greatly appreciated by all. In the discussion that followed, Dr. John Reichel exhibited some of the bacilli which were grown in great abundance by a new method.

G. A. Dick, *Res. Sec. for Pennsylvania.*

McLEAN COUNTY VETERINARY MEDICAL ASSOCIATION

The annual meeting of the McLean County Veterinary Medical Association was held at the Association of Commerce rooms, Bloomington, Ill., January 7, 1926. Veterinarians from McLean, Livingston, Ford, Clinton, Logan, Marshall and La Salle counties were in attendance.

Dr. Maurice C. Hall, Chief, Zoological Division, U. S. Bureau of Animal Industry, addressed the meeting. Dr. Hall reviewed some of the conditions confronting the profession, and pointed out the necessity for improved technic in rendering service to live stock owners as a means of demonstrating professional ability. He outlined the anthelmintic treatments for sheep, as perfected by the Bureau, and answered many questions on the treatment of parasitic diseases.

Dr. H. B. Raffensperger accompanied Dr. Hall on an inspection tour of farms throughout McLean County, checking up on the McLean County system of swine sanitation.

A most interesting article on rabies, by Dr. Paul H. DeKruif, was read by the Secretary. This article tells, in a fascinating manner, the difficulties and hardships encountered by Pasteur in his study of this disease, and efforts to find a way of combating it. Recent outbreaks of rabies in this territory brought out a lively discussion, led by Dr. E. H. Marquardt, of Bloomington, and Dr. W. V. Nesbitt, of Lincoln.

Area testing for the eradication of bovine tuberculosis was discussed by the following: Dr. E. J. Hart, County Veterinarian for Livingston County; Dr. H. P. Zimmerman, County Veterinarian for Logan County; Dr. H. C. Hunter, County Veterinarian for Ford County; and Dr. P. L. Varble, County Veterinarian for McLean County.

The following officers were elected for 1926: President, Dr. C. B. White, Stanford, vice-president; Dr. L. W. Swindlehurst, Heyworth; secretary-treasurer, Dr. J. S. Koen, Bloomington.

At 6:30, dinner for members and their wives was enjoyed at the Y. W. C. A., followed by a pleasant social hour.

J. S. Koen, *Secretary.*

MAINE VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Maine Veterinary Medical Association was held at the Congress Square Hotel, Portland, January

13, 1926. President E. E. Russell called the meeting to order. The reading of the minutes of the previous meeting was dispensed with, and Dr. M. E. Maddocks was selected temporary secretary in the absence of Dr. A. J. Neal.

Dr. J. B. Reidy reported that the U. S. Bureau of Animal Industry had not endorsed or sent any men to the Graham Scientific Breeding School, of Kansas City, as inferred by their advertisements.

Acting upon the recommendation of the nomination committee, the following officers were elected: Dr. C. L. Ryan, Dexter, president; Dr. M. E. Maddocks, Augusta, vice-president; Dr. A. J. Neal, Bangor, secretary-treasurer.

Dr. Ryan called on Dr. G. R. Inglis, of Auburn, for a talk on hog cholera prevention and treatment. Dr. Inglis, who has a large swine practice, gave a very interesting account of his work. He stated that the hog raisers who have their hogs vaccinated before they start feeding garbage suffer practically no losses. He strongly advocates the use of not less than 3 cc of virus, and as much as 5 cc on the extra large hogs. The minimum amount of serum given is 35 cc (bloody). He stated that since using a minimum of 3 cc of virus he has not had a break. He has given as high as 250 cc of serum at one dose, and if breaks come it is due to the virus in most cases. After hog cholera gets a good start in a herd, it is difficult to stop, so prevention is the safer. Dr. Inglis stated that in winter months when hogs slept piled up on one another, some of them carry an abnormal temperature, due to the crowded method of sleeping.

Dr. H. B. Wescott gave an account of a subcutaneous tuberculin test. He related the case of one cow that showed physical signs of the disease, but failed to react to that test and, upon postmortem, showed generalized infection. This demonstrates the necessity of veterinarians using check tests and good judgment in such cases.

Dr. Wescott also gave an account of an eye case in a dog. He treated this case successfully with a daily application of 1 per cent solution of mercurosol, and a drop of pure olive oil, after the mercurial application, works out pus and aids recovery. Dr. Batchelder reported 2½ per cent zinc sulphate solution satisfactory for keratitis.

Dr. G. R. Inglis reported a case of ulceration of the cornea that he cured with 10 per cent solution of neosilvol. This case had progressed to the point that, when Dr. Inglis examined the eye,

the pus spurted out when the lid was opened. Drs. Davis, Wescott and Inglis spoke of tumors on the membrana nictitans. Dr. Inglis used novocaine as a local anesthetic and snipped off the membrane.

Dr. M. E. Maddocks reported successfully treating a case of flu in cattle. Symptoms: cough, lacrimation and diarrhea. He treated the symptoms separately, and after recovery cleaned and disinfected the stable.

Dr. Ryan then suggested a question-box, and members presented various questions.

Dr. E. E. Russell, of Farmington, responding to the question of how properly to disinfect barns when contagious abortion had been found, stated that a thorough cleaning was the first thing to do, being sure that all dirt was removed before disinfection was started. Compound cresol solution was recommended for disinfection. He also used blue vitriol solution on the floors. Dr. M. E. Maddocks stated that he had more confidence in hot water and lime solution than most disinfectants for this purpose. Dr. Inglis stated that B-K solution (chlorid of lime) was a very good disinfectant in such cases.

How to treat azoturia was the next question given to Dr. Inglis, who stated that a treatment that might be successful in one case would not be in another, so one must use his best judgment, as symptoms of the case present themselves. Dr. Batchelder, of Presque Isle, advocated treatment by alternating hot and cold packs, and stated that from observation, recovery was more likely in the patient that did not thrash. He reported a case that recovered, after treatment with a laxative and sweating. This was followed by resting the patient for a week, on reduced feed, but an attack recurred when the horse was put back to work.

Dr. M. E. Maddocks stated that feeding is the main thing, and it should be regulated in accordance with the amount of work done. He recommended cutting the feed one-half during the first days of idleness. He was successful in handling a large lumber-camp stable along these lines, and had very little trouble with azoturia. Dr. E. E. Russell recommends lobelin sulphate as a sedative in azoturia. Dr. Davis, of Rumford, stated that he had better success in cases where he did not see the patient for several hours, and wondered if delay in drawing urine had a beneficial effect. Also that good nursing was most important in such cases.

In discussing the next subject, shipping-fever of horses, Dr. Inglis stated that most of his clients had their stock treated with mixed bacterins before shipment, another injection after arrival at destination, and another, two days later, increasing the dose the second time. This combination proved successful. For septicemia hemorrhagica he advises iron and tonics, chlorate of potash, and quinin in high fevers.

In answer to a question regarding a chronic cough, Dr. Reidy advised euphorbium compound, pertussin, or arsenic, if due to heaves.

In cat practice, Dr. Davis suggested rectal injections of castor oil as a treatment for vomiting. Dr. Inglis suggested mineral oil in two-teaspoonful doses.

Hon. H. M. Tucker, chief of the Division of Animal Industry, discussed chicken flu, from which many flocks of chickens suffered severe losses last winter, some large flocks being entirely wiped out by this disease. He mentioned how one careless poultryman carried the disease to the Fryeburg Fair and spread it to some 600 birds. Similar losses were suffered at Popsham and Brunswick. He suggested sanitation at fairs and chicken shows, disinfection of pens and crates, and allowing no diseased birds to enter. The drinking water should contain two tablespoonfuls of B-K solution to the gallon. At the Portland Poultry Show, recently held, such precautions proved very satisfactory, as all birds returned home free from disease. He advises treating diseased flocks by spraying B-K solution under and over the birds in the evening, so that they may inhale the vapor.

J. B. Reidy, *Resident Sec. for Maine.*

VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION

The thirty-third annual meeting of the Virginia State Veterinary Medical Association was held at Murphey's Hotel, Richmond, January 14-15, 1926, President H. H. Rowe presiding.

The Association was warmly welcomed to Richmond by Hon. J. Scott Parrish, president of the Richmond Chamber of Commerce, and one of the State's most enthusiastic breeders of pure-bred cattle and poultry. This address was responded to by Dr. J. G. Ferneyhough, State Veterinarian, who thanked Mr. Parrish for his complimentary remarks, and gave a brief outline of the work the veterinarians have accomplished in Virginia.

The President's address was then delivered, in which he drew attention to the splendid results being obtained in tuberculosis eradication, and to the great opportunity for service for the veterinarians in their communities.

Dr. O. F. Foley, of Bridgewater, presented "Vaccination for Roup in Poultry," in a very interesting and instructive manner. This paper was discussed by Dr. Geo. C. Faville, of Hampton.

A paper on "Fright Disease in Dogs" was presented by Drs. J. C. Wright and C. C. Rife, of Atlanta, Ga. Since the disease is very prevalent in this section at the present time, this paper attracted considerable attention and brought forth much discussion. Drs. Wright and Rife are to be complimented on the research work they have done, and as it is understood that this paper will be published in the JOURNAL, it is commended to the attention of the readers. Discussion on this paper was led by Dr. J. T. Wilson, of Hampton.

"Retained Placenta and Its Effects upon Sterility in Dairy Cows," was ably handled by Dr. H. F. Walker, Deputy State Veterinarian, Petersburg, after which, Dr. H. T. Farmer, of Richmond, led a brief discussion on the subject.

Mr. Aubrey Strauss, State Bacteriologist, made an address on "The Present Status of Rabies," in which it was shown that this disease is increasing to an alarming degree in the South, and that there seems to be a tendency for it to spread northward.

"Necessity for the Official Control of Contagious and Infectious Diseases by the Proper State Livestock Regulatory Official" was the title of a paper by Dr. Chas. McCullock, of Lexington. It clearly indicated that it was all-important that all contagious and infectious diseases be promptly reported to the proper state authority, in order that control measures might be instituted at once. Since Dr. McCullock is an M. D. as well as a veterinarian, and once served as State Veterinarian of Virginia, he was exceedingly well qualified to discuss the subject.

The Association was fortunate in having Dr. B. A. Beach, of the University of Wisconsin, present. Dr. Beach outlined the "Results of Two Years' Research Work on Bacillary White Diarrhea of Poultry." This condition is receiving considerable attention in Virginia at the present time, since it is being attempted by laymen to certify flocks as free from the disease on results of the agglutination test. The work reported by Dr. Beach strongly indicated that the test is not very reliable, and official certification not advisable at this time.

Mr. W. L. Kirby, of the Richmond Chamber of Commerce, presented a forceful address on "Cooperation Among all Agencies —for Results," stressing the fact that a betterment in agricultural conditions and better live stock would reflect with advantage to the veterinarian, and therefore the veterinarian should actively support agencies such as breeders' clubs, county agents, etc.

Election of officers for the ensuing year was then entered into, with the following results: Dr. John S. Nicholas, Charlottesville, president; Dr. J. T. Wilson, Hampton, 1st vice-president; Dr. J. F. Kagey, South Boston, 2nd vice-president; Dr. W. H. Ellett, Midlothian, secretary-treasurer.

President Nicholas appointed the following committees: Board of Censors: Drs. H. S. Willis, Gordonsville; B. W. White, No. Emporia; W. G. Chrisman, Danville; A. G. Hutton, Lexington; and L. O. Price, Blacksburg. Legislative Committee: Drs. J. G. Ferneyhough, Richmond, chairman; S. C. Neff, Staunton, and H. H. Rowe, Richmond.

At the close of the meeting, a luncheon was given, with Dr. J. G. Ferneyhough as toastmaster. A large number of the members attended this affair, at which the Association had as its guests, Hon. E. Lee Trinkle, Governor of Virginia, a number of the members of the General Assembly, which was in session at Richmond at the time, and other prominent Virginians. This luncheon has the distinction of being the first of the Association's social affairs to be addressed by a lady, this honor going to the Hon. Sarah Lee Fain, member of the House of Delegates, from Norfolk.

The summer meeting will be held at the seashore, on the second Thursday and Friday of July. A committee will be appointed to select the most desirable place along the coast.

W. H. ELLETT, *Secretary.*

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION

The twenty-ninth annual meeting of the Minnesota State Veterinary Medical Association was held in Minneapolis, at the Radisson Hotel, January 14-15, 1926. It was one of the largest meetings that this Association has ever held. There are in Minnesota approximately 400 licensed graduate veterinarians. The Secretary reported at this time that the membership of the

Association consisted of 229. There were in attendance at this meeting 235 veterinarians.

The meeting opened on Thursday morning, at 10:00 a. m., with the President's address, given by Dr. B. L. Cook, of Farmington. Dr. Cook pointed out the very great need of cooperation in carrying on veterinary practice. This was followed by the Secretary-Treasurer's report, which showed a balance of over $1200 in the treasury. A number of very interesting reports of committees took up the morning.

The election of officers resulted as follows: President, Dr. W. C. Prouse, Minneapolis; 1st vice-president, Dr. Wm. McLaughlin, Rush City; 2nd vice-president, Dr. A. J. Thompson, Hutchinson; secretary-treasurer, Dr. C. P. Fitch, St. Paul. Board of Trustees: Drs. W. C. Prouse, Minneapolis; H. A. Greaves, Glenwood; C. G. Jennings, Morris; C. A. Nelson, Brainerd; C. P. Fitch, St. Paul.

Dr. A. C. Spannaus, of Waconia, reported excellent results with the use of calf scours serum in the treatment of mastitis of cattle. An interesting discussion followed, in which it was brought out that certain cases of mastitis will yield to treatment and others will not. Dr. Guy VanDuzee, of Lamberton, gave a very interesting discussion on certain factors affecting veterinary practice. He spoke in particular in regard to the benefits resulting from broadcasting over the radio. He stated that the medical profession is using this method of reaching the public, and he believed that the same thing could be done in veterinary medicine. He also spoke in regard to the necessity of cooperation among all of the practitioners.

Dr. Carl Hanson, of Faribault, gave a most interesting discussion in respect to the practical experiences in fox-farming and handling diseases of foxes. This was an excellent presentation of the subject, and the membership was very much interested in the practical experiences brought out by Dr. Hanson. Dr. A. A. Feist, of St. Paul, spoke in regard to small animal practice, emphasizing the necessity of certain requisites in this rather specialized field. He spoke in particular in regard to the necessity of maintaining a good office, and practical experience in meeting the public in this type of practice.

In the evening, a discussion was held upon milk control work. This was presented by Dr. D. C. Lochead, Health Officer of Rochester. This elicited a very interesting discussion, following which it was voted that this Association go on record as favoring

the employment of a veterinarian as milk inspector, and further that a copy of this action be sent to the Surgeon General and to the JOURNAL of the A. V. M. A. The Public Health Department of the federal government has drawn up a model ordinance in which the veterinarian is not recognized as the logical milk inspector.

Dr. J. W. Kummer, of Hastings, gave a very interesting paper on "The Treatment of Cases of Parturient Paresis." Dr. Kummer uses a rather extensive medicinal treatment, and seems to think that he gets good results, as well as with inflation of the udder. Dr. C. F. Schlotthauer, of the Mayo Foundation at Rochester, gave the results of treatment of cases of retained placenta. Dr. C. A. Nelson, of Brainerd, presented a most interesting discussion on certain diseases in animals, due to sensitization by products contained in clover and buckwheat. These animals became sensitive to light, and certain skin lesions appeared.

On Friday, Dr. H. C. H. Kernkamp, of University Farm, presented a very interesting and practical demonstration of autopsy findings, and their use in the diagnosis of diseases of poultry. It was illustrated by lantern slides as well as by actual specimens. A very interesting discussion followed. Dr. D. L. Halver, of Shakopee, presented a paper on tuberculin testing, giving statistics in regard to this work in Minnesota. This was followed by a report on animal disease control work, given by Dr. C. E. Cotton, secretary and executive officer of the Minnesota State Livestock Sanitary Board. Following this, a most interesting discussion on tuberculin testing was had by the membership. This discussion lasted for over an hour.

In the afternoon, a committee reported upon the necessity of doing something to control the work of empirics, and to improve the ethics of the veterinary profession. This report was given by the chairman, Dr. R. L. West, of Waseca. After considerable discussion, it was voted to continue the committee and allow the use of a fund of $200 to carry on this work. It was felt that this was important work, and that it would take time to bring about satisfactory results. A committee was also appointed by the Association to consider the question of broadcasting over the radio. It was felt that this would be a successful means of informing the public of the work of the profession.

Dr. John W. Adams, president of the American Veterinary Medical Association, gave a very interesting talk upon certain phases of equine and bovine surgery, and also gave excellent

advice to the members in regard to charges for professional services. Dr. Adams' talk was most thoroughly appreciated, and he was given very close attention. Dr. C. H. Wetter, of Princeton, presented a paper on "Bracken Poisoning in Horses." He has had a number of cases of this condition in his practice. It was generally considered that this was one of the largest and most successful meetings of the Association.

C. P. FITCH, *Secretary.*

EIGHTEENTH ANNUAL CONFERENCE FOR VETERINARIANS AT CORNELL UNIVERSITY

The eighteenth annual conference for veterinarians was held at the New York State Veterinary College, Cornell University, January 14-15, 1926. The scope and motive of the Conference can not be better expressed than by listing the papers presented and those who prepared them:

"Growth of Veterinary Science and the Application of New Knowledge," by Dr. V. A. Moore.

"A Comparison of the Blood of the Normal Male and Two Castrated Goats," by Drs. P. A. Fish and C. E. Hayden.

"A Study of Proprietary Mixtures and Vitamin Products in Feeding Farm Animals," by Prof. L. A. Maynard, Dept. of Animal Husbandry, College of Agriculture.

"What Kind of Milk Ordinance Should We Have in New York State?" by Prof. J. D. Brew, Dairy Dept., College of Agriculture.

Lantern-Slide demonstrations of lymph-glands, by Dr. G. S. Hopkins.

"The Importance of Bovine Infection in Man and the Means of Preventing It, Such as Milk Pasteurization, Tuberculin Testing of Cattle and Vaccination of Children and Calves," by Dr. W. H. Park, Director of Research Laboratories, New York City Board of Health.

"Some Phases of Avian Tuberculosis and Their Bearing on the General Tuberculosis Problem," by Dr. L. Van Es, University of Nebraska, Lincoln, Nebr.

"The 'Hell' of It," by Hon. B. A. Pyrke, Commissioner of Farms and Markets, Albany, N. Y.

"Arteriosclerosis in Domesticated Animals" (Illustrated), by Dr. S. A. Goldberg.

Demonstration of the agglutination test for Bang abortion disease, by Dr. C. M. Carpenter.

Demonstration of the agglutination test for bacillary white diarrhea, by Dr. E. L. Brunett.

Demonstration of the examination of feces for parasites, by Dr. H. C. Stephenson.

"Hog Cholera Control, more Especially on Permanent Immunization of Young Pigs," by Dr. M. Dorset, Chief of Biochemic Division, U. S. B. A. I., Washington, D. C.

"Genital Diseases of Horses" (Illustrated), by Dr. W. L. Williams.

"Treatment of Diseases of the Genital Organs, Including Records for the Last Year," by Dr. C. H. Case, Akron, Ohio.

"The Agglutination Test as an Aid in the Handling of the Bang Abortion Disease," by Drs. R. R. Birch and H. L. Gilman.

"*Bacterium Abortus* in the Udders of Vaccinated and Naturally Infected Cows," by Dr. C. M. Carpenter.

"The Interpretation of Clinical Symptoms," by Dr. D. H. Udall.

"The Production of Anesthesia for Various Operations," by Dr. J. N. Frost.
"Some Problems in Small Animal Practice," by Dr. H. J. Milks.

All of the departments of this College and one or two of the College of Agriculture were represented on the program, in additon to the outside talent. Although two of the scheduled contributors to the program were necessarily absent, and their papers were not presented, there was a brimming measure of material and discussion.

On the evening of the first day there was a brief and felicitous address of welcome by President Farrand, followed by a moving picture film, "Life O'Riley," with some remarks on military education, by Captain E. M. Curley, of the U. S. Army. The remainder of the evening was given up to a smoker and sociability.

On the evening of the second day there was a banquet at which the principal speakers were Dr. L. Van Es, on "Education Preparatory to Veterinary Medicine," and Professor S. H. Gage, on "A Visit to Hippocrates and Galen." Dr. P. A. Fish served as toastmaster.

Among so many, comparisons would be invidious. Each paper had its appeal, either from a practical or an educational standpoint.

P. A. Fish.

VERMONT VETERINARY MEDICAL ASSOCIATION

The winter meeting of the Vermont Veterinary Medical Association was held at the Pavilion Hotel, Montpelier, January 20-21, 1926. About thirty members were present. Among the visitors at the meeting were E. H. Jones, Commissioner of Agriculture for Vermont; Dr. E. A. Crossman, B. A. I. inspector in charge of tuberculosis eradication, Boston, Mass., and Dr. T. A. Doyle, of Natick, Mass.

The afternoon session began promptly at 1:30 p. m.. The first speaker on the program was Dr. C. J. Marshall, of the University of Pennsylvania. His talk was relative to general practice, and was both interesting and highly instructive. Dr. H. W. Jakeman, of Boston, Mass., gave a very interesting talk on the more common poultry diseases.

On the morning of the second day, Dr. L. H. Adams gave a resumé of the work accomplished by his department in the eradication of tuberculosis in Vermont, during the past year.

Dr. E. L. Miller, of Newport, presented a paper on "The Relation of the Fox Industry to the Veterinarian," which was very comprehensive and interesting. Dr. H. S. Perley, of Hanover, N. H., discussed "Wounds of the Udder and Their Treatment," which was enjoyed by all.

Following the program, plans were made to arrange for the tuberculosis conference, to be held in June, at Burlington, Vt. The meeting adjourned at noon, and every one left with the feeling that the meeting was successful in every sense of the word.

GEO. THOMAS, *Secretary.*

MARYLAND STATE VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Maryland State Veterinary Medical Association was held at Medical Hall, Baltimore, January 21, 1926, with forty-six members in attendance.

The meeting was called to order by the President, Dr. C. M. Grubb, of Rockville. The presidental address was short but very much to the point. Dr. Grubb first thanked the officers and members of the Association for their cooperation during the two terms of his presidency. He called attention to the fact that we now have two-thirds of the veterinarians of the State as members of the Association. This work should be pushed until we have a one hundred per cent membership.

Several suggestions were made in regard to the handling of the tuberculosis eradication work in the State. Attention was also called to the fact that the State Legislature will convene next fall, and any legislation wished should be considered at an early date.

Dr. John W. Adams, of the University of Pennsylvania and president of the American Veterinary Medical Association, presented a paper on "Surgical Diagnosis." Before presenting his paper, Dr. Adams spoke for a few minutes on the American Veterinary Medical Association, and the benefit to be derived from a closer cooperation between this and the different state associations. Besides the very interesting technical information imparted by Dr. Adams, he impressed his listeners with at least two other outstanding facts. They were: first, to know your subject and, second, to apply that knowledge carefully and thoroughly. At the end of his paper, Dr. Adams was given a rising vote of thanks by the Association.

Dr. John S. Buckley, of the Pathological Division of the Bureau of Animal Industry, followed Dr. Adams. Dr. Buckley presented the results obtained by the Bureau in Experimental work with rabies vaccine. This first-hand information on so important and, at the present time, controversial a subject, was very much appreciated by the members of the Association. The conclusions generally drawn from Dr. Buckley's paper were to the effect that the time has not yet arrived when we can recommend the passage of community ordinances requiring compulsory preventive vaccination against rabies.

Dr. William P. Collins, noted small animal specialist, of Washington, D. C., gave the first paper of the afternoon session. The title of his paper was "A Few Important Points in the Development of a Small Animal Practice." Among other important facts, Dr. Collins brought out the value of knowing the different breeds of dogs, and of making a hobby of at least one breed. He also laid emphasis on having nice, clean offices and operating rooms. The operator should also provide himself with proper instruments and employ aseptic surgery.

A microscope is of great value in small animal practice. It is especially needed in the identification of both external and internal parasites. Another requisite of small animal work is a distemper ward. This disease (distemper) is the nightmare of the hospital staff, as animals affected with it are very apt to slip in unnoticed, with very embarassing consequences. Dr. Collins' paper was very much appreciated.

The last paper on the program was given by Dr. L. B. Ernest, of the Tuberculosis Eradication Division of the Bureau of Animal Industry, Washington, D. C. His subject was "The Progress of Tuberculosis Eradication Work in the United States." We were very much pleased to learn, from the data presented, that seven million cattle were tested under the "area plan" and two million under the "accredited herd plan." There are at present thirteen million cattle under supervision. This is twenty per cent of the cattle in the country. Twenty-two per cent of the total number of counties are doing area work. There are nineteen million, or twenty-eight per cent, of the cattle of the United States in these counties. There are also approximately one thousand veterinarians devoting the major portion of their time to this work. With such reports as this, it would seem that the eradication of this dread disease may not be so long delayed as was at first anticipated.

The officers elected for the ensuing year were: Dr. J. W. Hughes, Ammendale, president; Dr. H. A. Meisner, Baltimore, vice-president; Dr. E. M. Pickens, College Park, secretary-treasurer; Dr. C. M. Grubb, Rockville, member of the Executive Committee.

E. M. PICKENS, *Secretary.*

MICHIGAN STATE COLLEGE POSTGRADUATE COURSE

The third annual Postgraduate Course for Veterinarians was held at the Michigan State College, East Lansing, January 25-29, 1926. It was an unquestioned success. The faculty undertakes to put at the disposal of the veterinarians, who are within a reasonable distance, all the facilities of the College. An effort is made to make the sessions a real school and not just another meeting. Since probably no faculty is ever complete, it is desirable to call in outside talent, for experienced people can be found in practice as well as in some other faculty.

We were fortunate in having Dr. W. E. Muldoon, of Peru, Indiana, to assist in the work of small animal practice. Dr. Muldoon is not only a successful practitioner, but he possesses that rare ability to present what he knows in lucid and most interesting form. We do not know of any one in practice amongst the younger members of the profession who possesses this rare ability to a greater degree.

Reliance on some of the local practitioners of Michigan and Ohio proved to be without any disappointments. Dr. L. H. Smith, of Mount Clemens, Michigan, proved a master of the sterility situation. Dr. A. J. Klein, of Wauseon, Ohio, demonstrated that there is a big field for the veterinarian in poultry practice, and Dr. F. E. Stiles, of Battle Creek, gave a new vision of sheep practice.

A municipal meat inspection program of state-wide character was outlined by Dr. H. H. Sparhawk, of the Detroit Board of Health.

The most interesting thing about the sessions was the absence of any cloud of gloom which, in the past few years, has hung over the profession like a pall. The whole program, including the discussions and the little side sessions that mark the usual renewal of acquaintances, was characterized by the spirit of

optimism. We are convinced that short courses for graduate veterinarians meet a need, and that the practitioners themselves, after experience in a special field, can make notable contributions to these programs.

WARD GILTNER.

WISCONSIN VETERINARY MEDICAL ASSOCIATION AND SHORT COURSE FOR VETERINARIANS

The eleventh annual meeting of the Wisconsin Veterinary Medical Association was held in conjunction with the fourth annual short course offered by the University of Wisconsin, at the New Park Hotel, Madison, January 26-27-28-29, 1926.

The first session was called to order by the President, Dr. J. P. West, of Madison, who outlined the aim of the Association. He called attention to the few candidates who presented themselves for licenses to practice, as compared with the past.

Dr. J. C. Flynn, of Kansas City, showed a film "Hospitalization of Small Animals, which does Dr. Flynn great credit. Each day during the meeting he gave lectures and demonstrations. Dr. Flynn has his subjects well assembled and classified, showing that he has given much study to the treatment and handling of small animals. He contributed much to make the meeting a pronounced success.

Mr. D. S. Snyder, editor of the *Drovers' Journal*, spoke on "Improving Veterinary Service." He contended that what the profession needed was intelligent, ethical advertising. Mr. Snyder brings this conviction into action by defending the profession in his paper, and by combating adverse legislation ignorantly introduced into legislatures, such as permitting the layman to administer serums, viruses and vaccines. He was unstinting in his praise of the profession, and gave it the credit for the fact that the United States and Canada have no highly contagious animal diseases. The majority of the other countries have one of the dreaded animal pests, such as foot-and-mouth diesease and rinderpest, especially the former, almost continuously. We have had a few outbreaks of foot-and-mouth disease, one of contagious pleuropneumonia of cattle, all of which have been checked; hog cholera has been substantially reduced; blackleg and anthrax are being controlled; the Texas fever tick has been driven from large areas; glanders in horses is becoming a rarity, and now the control of bovine tuberculosis is in sight. Mr.

Snyder predicted a prosperous era ahead for agriculture, equal to, if not better, than that immediately following the War, as prices would be more on an equal basis.

Dr. J. S. Koen, of Bloomington, Ill., discussed an editorial in the JOURNAL of the A. V. M. A. entitled, "Prescribers or Peddlers." Dr. Koen took the affirmative side of the question raised in the editorial, together with several of the members, who were of the belief that they obtained beneficial results from the use of so-called mineral mixtures. Others were of a different opinion.

The Extension Division of the University of Wisconsin furnished many valuable numbers to the program. Prof. W. J. Meek presented a very interesting lecture on "The Endocrine Glands." Mr. D. S. Steel demonstrated an interesting blood test, in which the sex of the subject is shown.

Dr. L. M. Roderick, of the North Dakota Agricultural College, and a former resident of Wisconsin, gave an interesting account of tracing losses in live stock to badly cured sweet clover, in many localities of North Dakota. Prof. L. J. Cole demonstrated, with cattle raised at the University of Wisconsin farm, how red and white calves appear in pure-bred Holstein herds. Prof. T. Macklin graphically demonstrated the rapid development of the dairy industry in New Zealand, which may soon become a factor as a competitor in our markets.

Prof. L. F. Graber showed the value of bacteria in alfalfa-raising, and finally where a celebration was held in honor of "Miss Alfalfa," and a sadder occasion — the burial of "Old Man Timothy." It reminded us of another sad occasion that took place in this State, when Waupaca County held a public funeral for its last scrub bull.

Dr. F. B. Hadley explained congenital defects in calves. Dr. B. L. Warwick gave an illustrated lecture on "The Inheritance of Hernia in Swine." In view of the fact that Dr. B. A. Beach was chairman of the program committee, poultry subjects were given a prominent place on the program. Dr. Beach is no "chicken" when it comes to handling a "hen," especially her "innards." He demonstrated roundworm and tapeworm infestations, and stressed the fact that it is up to the veterinary profession to save the poultry industry, if it is to survive the ravages of diseases and intestinal worm infestations.

Prof. J. G. Halpin showed the effects of ultraviolet rays. Dr. J. B. Hayes demonstrated the use of sodium fluorid in treating lice-infested poultry. Mr. H. M. Lackie, of the Department of

Markets, spoke on "The Baby Chick Industry of Wisconsin." Professors J. G. Fuller and F. W. Duffee arranged a demonstration for measuring the pulling power of horses by the dynamometer car, for the benefit of the Association.

The members visited the new State Hospital on Wednesday. After partaking of an enjoyable lunch, Dr. C. A. Hedblom gave an illustrated lecture on "Recent Advances in Chest Surgery."

Reports on outbreaks of hemorrhagic septicemia were led by Drs. G. H. Harland, of Pewaukee; C. L. Lee, of Iola, and Chas. F. Van de Sand, of Kiel. Dr. A. E. Behnke gave a report of the slaughter of reactors for the past year.

The banquet on Wednesday evening was well attended. The Governor spoke in place of Commissioner J. D. Jones, who was called out of the City.

The election of officers for the ensuing year resulted as follows: President, Dr. T. Wrigglesworth, of Eau Claire; vice-president, Dr. R. A. Garman, of Tomah; secretary, Dr. O. H. Eliason, of Madison. Dr. W. F. Nolechek, of Thorp, was elected director for the Northern District.

Many of the members remained for the clinics at Dr. West's hospital, where the following subjects were demonstrated: "Roarer," by Dr. A. J. Abbott, of Marshfield; "Cryptorchid," and "Tendenotomy" (stringhalt), by Dr. J. F. Roub, of Monroe. Dr. J. C. Flynn gave demonstrations on dogs and cats.

The Association voted to meet in Madison for the summer session in July. Dr. Herbert Lothe, of Waukesha, was elected official representative to the A. V. M. A., and Dr. R. S. Heer, of Platteville, alternate.

O. H. Eliason, *Secretary.*

NORTHEASTERN PENNSYLVANIA VETERINARY MEDICAL CLUB

The monthly meeting of the Northeastern Pennsylvania Veterinary Medical Club was held at the Hotel Casey, Scranton, January 29, 1926.

A luncheon was enjoyed by the members at noon, after which a business session was held. Dr. B. M. Underhill delivered a very impressive lecture on "The Pathology of the Udder of Cattle." A lively discussion followed.

This lecture was one of the present series being given by the University of Pennsylvania Veterinary Extension School.

The next meeting will be held in Wilkes-Barre, at the Terminal Hotel, sometime in the middle of March, at which time the subject of "Drugs" will be discussed.

T. D. JAMES. *Secretary.*

SOUTH DAKOTA VETERINARY MEDICAL ASSOCIATION

The midwinter meeting of the South Dakota Veterinary Medical Association was held in Sioux Falls, January 28-29, 1926. The cold, stormy weather that prevailed the first day of the meeting and the day preceding made automobile travel on some roads difficult, and on some others quite impossible. As a result, the first session was not as well attended as the year before. Snowbound roads were soon opened and with a decided rise in temperature the usual full attendance was soon reached.

The program was both varied and interesting, and all attending signified their satisafction with all parts of it. Dr. J. A. Barger, B. A. I. inspector in charge of tuberculosis eradication work in Iowa, Dr. Elmer Lash, of the Tuberculosis Eradication Division of the B. A. I., and Dr. M. W. Ray, Director of Animal Industry in the State Department of Agriculture, presented the various aspects of their work. Mr. Turner Wright, live stock specialist in the Extension Division of the South Dakota State College, presented an outline of the most approved methods of swine feeding and management.

Dr. E. E. Burdick, who has had more experience than any other practitioner in the State, treating and handling fur-bearing animals kept in domestication, presented his methods of dealing with various aspects of this part of his practice. Dr. W. F. Guard, Professor of Veterinary Surgery, Iowa State College, discussed several important surgical problems of common occurrence, illustrating his talk with lantern slides.

Dr. C. Vander Schaaf, who has developed a reputation as a successful poultry practitioner, presented the results of his experience dealing with the common diseases of poultry. Mr. Andrew Palm, the oldest and one of the most successful county agents in the state, discussed his method of cooperating with the local veterinarians. All of the topics presented were discussed by the attending veterinarians, and many ideas and experiences were exchanged.

The following firms, handling veterinary supplies, had interesting exhibits that received more than passing attention. Through their combined efforts all attending veterinarians and their wives were served a fine banquet in the ball-room of the Cataract Hotel, the evening of January 28: Sioux Falls Serum Company, Sioux City Serum Company, Marrinan Medical Supply Company, Royal Serum Company, Purity Serum Company, United Serum Company and Corn States Serum Company.

The following officers were elected for the ensuing year: President, Dr. George G. Faber, Mitchell; vice-president, Dr. F. M. Phillips, Dell Rapids; secretary-treasurer, Dr. C. C. Lipp, Brookings.

C. C. LIPP, *Secretary.*

UTAH STATE VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Utah State Veterinary Medical Association was held in the Capitol Bldg., Salt Lake City, October 2, 1925.

The matter of forming a Utah-Idaho Association was taken up, and the Secretary was instructed to correspond with the secretary of the Idaho Association regarding the matter. The balance of the meeting was taken up with the discussion of various matters of interest to the practicing veterinarians.

The election of officers resulted as follows: President, Dr. Oscar Wennergren, Logan; vice-president, Dr. Arthur Vance, Provo; secretary-treasurer, Dr. E. A. Bundy (re-elected), Ogden.

E. A. BUNDY, *Secretary.*

POULTRY SHORT COURSE FOR NEBRASKA VETERINARIANS

The poultry short course for veterinarians, held ay the Department of Animal Pathology and Hygiene, of the University of Nebraska, Lincoln, February 2-3-4, 1926, under the direction of Dr. L. Van Es and his able assistants, Drs. Martin and Skidmore, was a success in every way. Each day at nine o'clock, the one hundred or more veterinarians in attendance would meet in general assembly to listen to lectures on important poultry diseases and sanitation. The major portion of the afternoons was devoted to culling, caponizing and laboratory work on the bacillary white diarrhea test. The men were divided into three

groups for this work, alternating each day for new work. One afternoon caponizing would be taken up and each veterinarian would be allowed to caponize as many birds as he wished. The next afternoon culling contests were held. The third day laboratory work on the agglutination test was the order of the day.

Besides the veterinarians above mentioned, credit for the success of the course must be given to Professor F. E. Mussehl, head of the Poultry Department of the University; Mr. S. J. Marsden, of the College, an expert in culling and feeding of poultry; Dr. Latimer, the well-known comparative anatomist; and Mr. Nelson, of Nelson Brothers Company, live poultry shippers, who told us of disease problems in shipping.

Nebraska veterinarians in attendance all agree that the course was well worth while, and take this opportunity to thank publicly the University, Dr. Van Es and all who contributed to its success, for the benefits derived from attending it.

GEO. A. YOUNG, *Reporter.*

CONNECTICUT VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Connecticut Veterinary Medical Association was held at the Hotel Garde, Hartford, February 3, 1926.

The program was confined to a paper by Dr. Geo. E. Corwin, entitled, "Practical Control of Abortion in Commercial Dairy Herds." This paper was discussed by a number of the members, and it seemed to be the consensus of opinion that the most practical method of control of abortion in infected herds was by vaccination with a viable vaccine.

The following officers were elected for the ensuing year: President, Dr. I. R. Vail, Bristol; 1st vice-president, Dr. W. F. Vail, Greenwich; 2nd vice-president, Dr. R. J. Morin, Rockville; secretary, Dr. Geo. E. Corwin, Hartford; treasurer, Dr. Thomas Bland, Waterbury. Board of censors: Drs. P. T. Keeley, Waterbury; A. T. Gilyard, Waterbury; W. J. Southey, Bridgeport; E. M. Bitgood, Middletown; E. H. Patchen, Milford.

GEO. E. CORWIN, *Secretary.*

WILLAMETTE VALLEY VETERINARY ASSOCIATION

The Willamette Valley Veterinary Association met at Salem, Ore., February 10, 1926, with fifteen of the nineteen members present.

NECROLOGY

THOMAS E. MALONEY

Dr. Thomas E. Maloney, of Fall River, Mass., died at his home, after a short illness, February 12, 1926.

Born in Georgiaville, R. I., July 20, 1865, Dr. Maloney was graduated from the New York College of Veterinary Surgeons, in 1889, and practiced continuously in Fall River up to the time of his death. During this time he served for fourteen years as veterinarian to the Board of Health and also as inspector of animals for Fall River and Somerset.

Dr. T. E. MALONEY

Dr. Maloney was a forceful speaker and took a prominent part in all veterinary activities in New England. He was held in such high esteem by the members of the profession that a few days after his death a movement was started to perpetuate his memory by means of an endowment to be administered by the Massachusetts Veterinary Association.

While connected with the Board of Health, Dr. Maloney waged a vigorous campaign in behalf of a pure milk supply for his city. He waged a continuous fight against insanitary conditions on

farms supplying milk to Fall River. He conducted his fight fairly and squarely and even his opponents admired him for the straightforward methods he employed. It was while he was so deeply interested in the pure milk question that Dr. Maloney originated the milk inspectors' score card, which was subsequently adopted, with but few changes, by the national organization.

Dr. Maloney joined the A. V. M. A. in 1909 and served as resident secretary for Massachusetts, 1922-23. He was a member of the Massachusetts State Board of Registration in Veterinary Medicine since its organization about 25 years ago. He was a member of the Massachusetts Veterinary Association and served as president for several years, as member of the Executive Board and many important committees. He was also a member of the New York State Veterinary Medical Society, charter member of the Boston City Club, Fall River Kennel Club, National Travel Club and Forest and Stream Society of America.

Surviving Dr. Maloney are his widow, three daughters, two brothers and two sisters.

JOHN W. HAFFER

Dr. John W. Haffer, of Paterson, N. J., passed away at the Paterson General Hospital, March 9, 1926, after an illness of about a week due to pleurisy and double pneumonia.

Born in Paterson, 56 years ago, Dr. Haffer attended the local schools and then the Ontario Veterinary College, from which he was graduated in 1903. Later he attended the McKillip Veterinary College and was graduated in 1906. He then established a practice in Paterson and became one of the ablest practitioners in the State. He was City Veterinarian for a time and Coroner of Passaic County.

Dr. Haffer joined the A. V. M. A. in 1907. He was a past president (1924-25) of the Veterinary Medical Association of New Jersey; and past secretary of the New Jersey State Board of Veterinary Examiners, having been appointed to the Board by the late President Woodrow Wilson, while Governor of New Jersey. He was past grand knight of Paterson Council No. 240, Knights of Columbus.

Among the honorary pallbearers were Drs. Arthur W. Smith, of Orange; James T. Glennon, of Newark; Wm. Herbert Lowe, of Paterson; and Thomas E. Smith, of Jersey City.

Dr. Haffer is survived by four sons and three grandchildren.

WESLEY N. NEIL

Dr. Wesley N. Neil, B. A. I. inspector-in-charge, federal meat inspection service, Chicago, Illinois, passed away suddenly, March 7, 1926. For twenty-seven years, he had served the Bureau most faithfully, and on the very day he met a tragic death by accident, he had rendered a full day's service to his government.

Born at Tower Hill, Ill., August 2, 1872, Dr. Neil received his veterinary training in the Ontario Veterinary College, from which he was graduated in 1896. He received his first appointment in the B. A. I. in 1899 and was sent to Kansas City, where he reported for duty to the late Dr. S. E. Bennett, then inspector-in-charge. Dr. Neil was transferred to Waterloo, Iowa, in 1901, as inspector-in-charge. In 1903, he was transferred to Wichita, Kansas, and in 1909 to Omaha, Nebraska. In recognition of his faithful and efficient services, Dr. Neil was transferred to Chicago, in 1914, to succeed the late Dr. Bennett, who resigned at that time. Dr. Neil remained in charge at Chicago until his death.

Dr. Neil was not narrow in his vision in relation to his associates, and very readily lent a helping hand to the faithful employes of the service who tried to make good. This fact is evidenced by the many inspectors-in-charge, in the various parts of the country, who are not only willing to testify by word but, by their services rendered, are living testimonials that the training they received under Dr. Neil has made them valuable men to the meat inspection service. He was a master of detail as well as a keen observer, and these qualities have contributed much in helping to advance the efficiency of the service. One of the outstanding accomplishments of Dr. Neil and his associates was a more detailed search for beef measles, which called attention to the frequency of the infestation in this country. There are other things that could be mentioned, in the line of packing-house equipment, but it is sufficient to say that Dr. Neil gave the best part of his life in the faithful service of his country.

Funeral services were held in the Auburn Park M. E. Church, 75th and Harvard Avenue, on Wednesday afternoon, March 10, 1926. The Reverend Doctor D. W. Taylor, his pastor, conducted

the services. Dr. Neil was a faithful member of the Auburn Park Methodist Church. Members of John B. Sherman Lodge A. F. & A. M. and others of the federal service performed the beautiful Masonic ceremony at the casket, where all were proud to say: "There lies a just and upright Mason." The floral offerings were many and beautiful; the altar of the church was buried in flowers, the gifts of friends speaking their mute story of esteem. Representatives high in official circles in the business world paid their tribute of respect at the grave. He was laid to rest in Mount Hope Cemetery on Wednesday afternoon, March 10, 1926, in the presence of a large number of sorrowing friends.

Dr. Neil joined the A. V. M. A. in 1917. He was a member of the National Association of B. A. I Veterinarians, and a past president of the Chicago U. S. D. A. Club.

In the passing of Dr. Neil, the Bureau of Animal Industry lost a faithful worker, and the community a good citizen. In the words of Henry Van Dyke:

"Self is the only prison that can ever bind the soul;
Love is the only angel that can make the gates unroll;
And when He comes to call thee, arise and follow fast—
His way may lie through darkness, but it leads to light at last."

H. B. R.

MRS. HERBERT SILVERWOOD

Mrs. Sarah I. Silverwood, widow of the late Dr. Herbert Silverwood, of Portland, Oregon, died February 8, 1926, following an apoplectic stroke five days previously, from which she never regained consciousness. The recent death of her husband came as a great shock to Mrs. Silverwood and undoubtedly contributed to her passing so soon afterward.

Dr. Silverwood and his wife were a very congenial couple. No children were ever born to them. They were inseparable and loved their home. They would take long walks together, and found great pleasure in each other's company. A woman of high character and a gentle disposition, Mrs. Silverwood was loved by all who knew her. She was laid to rest beside her husband, in Riverview Cemetery.

Peace be to her ashes.

E. E. C.

JOSEPH TELFER

Dr. Joseph Telfer, of Milton, Ontario, died February 6, 1926, in Toronto, following an operation.

Born in Northumberland, England, sixty years ago, Dr. Telfer came to Canada and located in Milton in 1882. He attended the Ontario Veterinary College, and was graduated in 1896. He practiced in Halton County almost thirty years, and was highly esteemed by his fellow citizens.

Dr. Telfer was a great lover of horses, and for many years was one of the chief exhibitors of Hackneys, Clydesdales, and other horses at the Canadian National Exposition, at Toronto, as well as other exhibitions and fairs throughout Canada, capturing hundreds of prizes with his entries. He was also a successful breeder and exhibitor of poultry and pigeons.

Two brothers, Thomas and W. B., both now dead, were veterinarians, also graduates of the Ontario Veterinary College, in 1890 and 1893, respectively. Dr. Telfer is survived by his widow.

ALBERT H. McINTOSH

Dr. Albert H. McIntosh, of Summit, N. J., died February 8, 1926, after an illness of a few days. He was 61 years of age, and had practiced in Summit and vicinity for 32 years. For nine years he had been Overseer of the Poor.

Dr. McIntosh was a member of Crystal Lodge of Odd Fellows, Overlook Lodge of Free Masons, the Royal Arch Chapter, the Knights Templar and the Order of the Eastern Star, in all of which he was active. He is survived by his wife.

W. G. NEILSON

Dr. W. G. Neilson, of Monmouth, Ill., was found dead at the wheel of his automobile, January 30, 1926, a victim of an attack of heart disease.

Born in Milton, Ontario, February 17, 1863, he received his veterinary education in the Ontario Veterinary College, from which he was graduated in 1891. He immediately located in Monmouth, and practiced there until his death. He is survived by his widow, three sons, and one daughter.

EDWARD C. CARLE

Dr. Edward C. Carle, of St. Joseph, Mo., died at the home of his son, Dr. H. W. Carle, St. Joseph, Mo., December 15, 1925, the culmination of an illness dating back five years.

Born October 2, 1868, in Cincinnati, Ohio, Dr. Carle received his veterinary education in the Cincinnati Veterinary College. He was graduated in 1904 and later became a member of the faculty. He entered the service of the B. A. I. and, after several assignments, was stationed in St. Joseph. While there he helped to organize the St. Joseph Veterinary College. He retired in 1920, on account of poor health.

Dr. Carle joined the A. V. M. A. in 1912.

C. P. COURTLAND

Dr. C. P. Courtland, of DeWitt, Mich., died March 6, 1926, following a brief illness, due to pneumonia. Dr. Courtland was a graduate of the Grand Rapids Veterinary College, class of 1911, and had practiced at DeWitt for a number of years. He was a member of the Michigan State Veterinary Medical Association. He is survived by his widow and four children.

JAMES M. ARMSTRONG

Dr. James McCreight Armstrong died at his home in Markham, Ontario, March 8, 1926, after a short illness. He was a graduate of the Ontario Veterinary College, class of 1892, and had been a very successful practitioner. He was 56 years of age. Dr. Armstrong was a past president of the Markham Fair Board and was prominently identified with the business, social and religious activities of his community.

CHARLES F. OAT

Dr. Charles F. Oat, of West Chester, Pa., died suddenly on March 8, 1926. He was a graduate of the University of Pennsylvania, class of 1890, and had been in general practice in West Chester ever since his graduation.

MARRIAGES

Dr. Dyar C. Wood (K. C. V. C. '18) to Miss Jessie Robbins, both of Greensburg, Ind., February 25, 1926, at Greensburg, Ind.

BIRTHS

To Dr. and Mrs. John J. Glover, of Kansas City, Mo., a son, William O., January 12, 1926.

To Dr. and Mrs. T. O. Booth, of Fort Worth, Texas, a son, January 23, 1926.

To Dr. and Mrs. C. F. Fischer, of Garden City, Mo., a daughter, Lucky Katherine, February 12, 1926.

PERSONALS

Dr. S. E. Springer (O. S. U. '04) has removed from Kemmerer, Wyo., to Buffalo, same state.

Dr. J. Raymond Wells (U. P. '22) is chief food and dairy inspector of West Palm Beach, Florida.

Dr. W. W. Shartle (Ind. '09) has requested a change of address from Montgomery to Andalusia, Ala., effective March 1, 1926.

Dr. R. C. Dickson (K. C. V. C. '18) has requested a change of address from Jefferson City, Mo., to 4101 Drexel Blvd., Chicago, Ill.

Dr. C. C. Hunt (Ind. '10), recently of Chicago, Ill., gives his permanent address as Moreland Manor, 319 West North Street, Lima, Ohio.

Dr. Robert Learmonth (Mich. '25) is conducting the Blue Cross Small Animal Clinic, at 2045-47 South University Avenue, Denver, Colo.

Dr. Q. C. Dobbins (Ind. '12), of Bedford, Ind., has announced his candidacy for the office of Coroner of Lawrence County on the Republican ticket.

Dr. D. W. Cheney (Corn. '22) has disposed of his practice at Potsdam, N. Y., to accept the position of meat and milk inspector of Ogdensburg, N. Y.

Dr. E. H. Ingold (Chi. '18), formerly located at Orange City, Iowa, is now at Cherokee, Iowa, on accredited herd work in Sac, Ida and Cherokee counties.

Dr. O. B. Neely (Iowa '24) has resigned his position with the Tennessee Department of Agriculture and will enter practice and operate a stock farm at Obion, Tenn.

Dr. John Cheney (Corn. '24), who has been in practice at Malone, N. Y., has removed to Potsdam, N. Y., and taken over the practice which his brother had established there.

Dr. Irvin Owens (K. C. V. C. '03) has returned to his official station at South St. Paul, Minn., after several months absence in Texas, on foot-and-mouth disease eradication.

Dr. Walter J. Crocker (U. P. '11) has been appointed assistant clinical pathologist of the Laboratory of Clinical Pathology, Philadelphia General Hospital, Philadelphia, Pa.

Dr. J. Martin Rice (Ont. '06), formerly of Lindsay, Ont., is now located at London, Ont., where he maintains a modernly equipped hospital and gives special attention to canine practice.

Dr. C. F. Birmingham (K. C. V. C. '11), who has been in practice at Ovid, Mich., since his graduation, has been compelled to relinquish his practice, and has gone to Arizona, on account of ill health.

Dr. Eldon R. Smith (Gr. Rap. '13), city veterinarian of Grand Rapids, Mich., recently was compelled to take the Pasteur treatment, following a bite inflicted by a rabid police dog, which also bit a ten-year-old girl.

Dr. T. F. Pfaff (Chi. '18), of New Glarus, Wis., after disposing of his practice, took a four-months trip through the South, spending most of the time in Florida. He left Wisconsin, November first, and made the entire trip by car.

Dr. Sivert Eriksen (K. S. A. C. '20) has resigned his position as poultry pathologist at the Poultry Experiment Station, Mountain Grove, Mo., and has taken charge of poultry work for the Jensen-Salsbery Laboratories, of Kansas City, Mo.

Dr. H. W. Brown (Ind. '23) has removed from Monrovia, Ind., and is now located at 623 West Main Street, Fort Wayne, Ind. On March 20, Dr. Brown opened a hospital at the new address, exclusively for the treatment of canine and feline patients.

Dr. George W. Gillie (O. S. U. '07), of Fort Wayne, Ind., is planning the erection of a veterinay hospital that will combine many new features in the way of modern hospital equipment and appointment. He will have Dr. S. D. Wiles associated with him.

Drs. George J. Kline (Gr. Rap. '14), of Tipton, Mich., and James R. Taylor (Chi. '04), of Sullivan, Ill., have been granted licenses to practice in Michigan under the provisions of the reciprocity agreement between the state examining boards of Nebraska and Michigan.

Dr. E. K. Sales (Mich. '16) recently conducted a troop of Boy Scouts on a tour of inspection through the Veterinary Clinic at Michigan State College. The boys were much interested in what they saw, particularly the modern methods of restraining animals for operations.

Drs. H. D. Hilton (Mich. '25), of Addison, Mich., D. H. Dickie (Mich. '23), of Lawton, Mich., and H. P. Conrad (Mich. '21), of Owosso, Mich., have accepted positions with the Michigan Department of Agriculture and are now engaged in tuberculin testing and allied work.

Dr. G. M. Wagaman (Ind. '12), of Kokomo, Ind., was held up by two armed men on a lonely road northeast of Cassville, March 5, and robbed of $20 in cash, a number of checks, and several other articles. Dr. Wagaman had received a "fake" call to see a sick horse at about 10 o'clock.

Dr. Roy E. Kluck (McK. '15), president of the Illinois State Veterinary Medical Association, recently completed a postgraduate course in small animal practice at Evanston, Ill., and on March 1, 1926, removed from Forreston, Ill., to Freeport, where he intends to give special attention to small animal practice.

Dr. W. A. Hagan (K. S. A. C. '16) has returned to Ithaca, after an absence of six months, spent in study in Denmark, Germany, France and England. On February 26, 1926, Dr. Hagan addressed the New York State Veterinary College Forum on "The Teaching of Bacteriology, Research in Animal Diseases and the Veterinary Colleges in Denmark, Germany, France and England."